The Relation Between Post-Earnings Announcement Drift and the Value Anomaly in the UK Stock Market

By

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Biographical Note:

Pedro Lancastre was born and raised in Braga. Most of his life journey was made in his home town, whereas he studied a Bachelor Degree in International Business and then a Bachelor Degree in Management at University of Minho graduating in 2013.

During his lifetime he had some training courses abroad and he practiced sports mainly football and tennis. He also does some volunteering work during his free time.

In 2014, he enrolled at FEP to start his master degree in finance, in which he developed interest to follow career in this field.

Abstract

Two of the oldest common anomalies that occur in the financial market are the value anomaly and post-earnings announcement drift. Value anomaly consists in value stocks that outperform growth stocks by having greater profitability with the same level of risk, while post-earnings announcement drift consists in firms that report unexpected high earnings outperform firms that report unexpected poor earnings by having greater profitability with the same level of risk.

Both anomalies are provoked by different reactions in the market. The PEAD is provoked by an underreaction and the value anomaly is caused by an overreaction as it concerns when new information arrives, which have been part of study over the years among experts. The aim of this study is to link both anomalies in the UK stock market, since there is a lack of study in this field. Moreover, this study has theoretical relevance by testing the efficiency market hypothesis to see if investors can beat the market and practical relevance in the perspective of the investors to see if they can create a profitable strategy taking advantage of the market anomalies.

It has been found that based on book-to-market, earnings-to-price, cash-flow-to-price and sales growth classifications achieved a 29.84%, 36.6%, 45.52% and 25.72% annual average abnormal return respectively.

This study in supporting with previous studies about anomalies in this market conclude that UK stock market challenge the efficiency market hypothesis.

Key-words: Value anomaly, post-earnings announcement drift; market efficiency hypothesis; overreaction, underreaction

JEL-Codes: G02, G14

Sumário

Duas das mais comuns antigas anomalias que ocorrem no mercado financeiro são o valor da anomalia e o *post-earnings announcement drift.* Valor da anomalia consiste em ações de valor ultrapassarem em desempenho ao obter maiores rendibilidades do que as ações de crescimento para o mesmo nível de risco, enquanto *post-earnings announcement drift* consiste em empresas que apresentam inesperadamente maiores resultados obtêm melhor desempenho ao conseguir maiores rendibilidades para o mesmo nível de risco do que empresas que apresentam inesperadamente menores resultados.

Ambas anomalias são provocadas por diferentes reacções no mercado. O *PEAD* é provocado pela sub-reacção e o valor da anomalia é o resultado de uma sobre-reacção no que diz respeito à chegada de nova informação, o que tem sido parte de estudo ao longo dos anos por especialistas. O objectivo deste estudo é ligar as duas anomalias no mercado do Reino Unido, uma vez que há uma falha de estudo neste tema para este mercado. Além do mais, este estudo tem relevância teórica ao testar a hipótese de eficiência de mercado para ver se os investidores conseguem bater o mercado e tem também relevância prática na perspetiva do investidor para saber se ele consegue criar estratégias lucráveis, tirando vantagens das anomalias de mercado.

Foi encontrado com base nas classificações de *book-to-market*, *earnings-to-price*, *cash-flow-to-price* e *sales growth* um retorno anormal médio anual de 29.84%, 36.6%, 45.52% e 25.72% respectivamente.

Este estudo com base nos estudos anteriores sobre anomalias neste mercado conclui que o mercado de ações do Reino Unido desafia a hipótese de eficiência de mercado.

Palavras-Chave: valor de anomalia, *post-earnings announcement drift*; hipótese de eficiência de mercado, sobre-reacção e sub-reacção

JEL-Codes: G02, G14

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1. Introduction

There are several anomalies that occur in the financial markets, which have been created interest of study in the financial literature over the years and among them are the post-earnings announcement drift and the value anomaly. Relevant literature found to cover the existence of these anomalies (e.g. Foster et al. (1984), Bernard and Thomas (1989), Lakonishok et al. (1994) and Liu et al. (2003)).

Recently, Yan and Zhao (2011) were the first and the only to link value anomaly directed to the post-earnings announcement drift and analyse the relationship between the two anomalies by covering the US stock market over 24 years, starting from 1984 until 2008. Using calendar time portfolio formation and 1, 3, 6, 9, 12 months holding period and BHAR as return metric, they found that a trading strategy taking a long position in value stocks when both EARs and earnings surprise are positive and short position in glamour stocks when both are negative can generate 16.6% to 18% annual returns.

To best of our knowledge since this theme is recent to link the two anomalies, there is a lack of investigation in this field for other countries in which we intend to fill the gap in the literature by linking the two anomalies as well fill emptiness of (in)efficiency research on the UK stock market. We will rely on the Yan and Zhao (2011) study as our guideline, since it is the only published study. This topic focuses on the relation between these two anomalies and it has theoretical and practical relevance. It has theoretical relevance because it has theoretical implication of the results by knowing if the markets are efficient, and by that we want to know if stock prices would fully reflect all available and relevant information at any given time. These anomalies question the validity of the efficiency of the markets, therefore the idea of testing the efficient market hypothesis (EMH) is important because it says that all stocks trade at their fair value because they reflect all available information, so investors cannot beat the market. As for the practical relevance, it is important for the perspective of the investor to see if they are able to create profitable opportunities by taking advantage of the anomalies of the market by identifying undervalued securities expecting that in the future will increase to outperform the market. In this way, we intend to answer our research questions: Is there any relation between the two anomalies? If the relation remains constant or not?

Our sample expands from 2010Q1 until 2015Q3 because we want to analyse the recent years and the events that happened in the UK stock during this period of time to see if it had any impact on the stock market and for the investor decisions.

Following the main author for this study, we intend to construct portfolios sorted into quintiles based on the proxy classification with subsamples that vary with the direction of the signs. The subsamples will be based on the earnings announcement abnormal returns and earnings surprise performing a total of six sub-samples. Moreover, we add two more subsamples based on the earnings abnormal return sign in order to have more strengthens statistical tests and robustness for the EAAR/ES samples.

The results by linking the two anomalies for the UK stock market found some evidences that challenge the Efficiency Market Hypothesis, as well significant drifts and the presence of anomalies in the event-window and the post-event window. Moreover, we found that our results for the 3-day event window and post-event windows are more volatile for the value stocks than for the glamour stocks with the same level of risk creating more profitable opportunities for the former than the latter stocks. In additionally, the same applies for the robustness check when we study for the size effect, adding also a small firm effect.

Besides this chapter, the study proceeds with the following chapters: chapter 2 literature review, chapter 3 is the methodology, chapter 4 we describe the data and descriptive statistics, chapter 5 portfolio results under the subsample signs condition for both anomalies and we finish with chapter 6 where it remarks for conclusion, limitations, further research and suggestions.

2. Literature Review

In this chapter contains evidence of literature review of both anomalies and possible explanations. In this way, in section 2.1 we have post-earnings announcement drift, section 2.2 value anomaly and section 2.3 behavior factors of underreaction and overreaction.

2.1 Post-Earnings Announcement Drift

Post-Earnings Announcement Drift (PEAD) anomaly is an anomaly that occurs in the financial market when firms report unexpectedly high earnings outperform firms reporting poor earnings with the same level of risk. Ball and Brown (1968) were the first to establish the existence of this anomaly through recognizing that following earnings announcements, the estimated cumulative abnormal returns (CAR) continuously drifted up in relation to firms announcing good news and continuously drifted down in relation to firms announcing bad news (Bernard and Thomas, 1989).

The evidence of PEAD was later supported by studies such as Jones and Litzenberger (1970) whereas in their investigation of quarterly earnings with a sample of stocks on the US market from 1962-1967 found violations of the semi-strong efficiency by the fact of the market not adjust instantaneously and correctly when new information arrives, instead of that it reacts slowly and the results differ from the market.

Later, Foster et al. (1984) in their study on US stocks 1974-1981 observed a correlation between abnormal returns and the unexpected earnings, by making a connection with size of the firms. *"The smaller the firm, the larger is the post-announcement cumulative abnormal return with the positive (negative) earnings portfolios having positive (negative) cumulative abnormal returns". (p.598)*

Moreover, Bernard and Thomas (1989) examine stocks in the US market over the period 1974-86 and found that a large amount of the drift that takes place in the first 60 days following the announcement of earnings occurs within the first 5 days following the announcement of earnings. They estimated for 240 days for post-announcement and create an event-time portfolio formation with a size-adjusted risk control over the 120 days surrounding the earnings announcement date. In fact Bernard and Thomas (1989) established that the percentage of the drift that occurs within the first 5 days following the announcement of earnings in relation to the drift that takes place in the first 60 days following the announcement of earnings is 13% for small firms, 18% for medium firms, and 20% for large firms. In their empirical result to measure the magnitude of the drift, they obtain a long position in the highest unexpected earnings decile and a short position in the lowest decile would have yielded an estimated abnormal return of approximately 4.2% over the 60 days after the earnings announcement, or about 18% on an annualized basis.

Bernard and Thomas (1989) explains that when the Earning based model is used it reflects an identified risk premium which lead to PEAD been identified and this is because one of the problems security model aims to alleviate is the risk adjustment problem of Earnings based model.

Liu et al. (2003) show another study outside of US stock market. This study was made for the UK stock market to find evidence of PEAD. They found evidence of PEAD, confirm that this anomaly is not a specific market, but exists and persist in any stock market. Extracting a sample period from 1988 until 1998, using a calendar time portfolio formation and a 3, 6, 9, 12 months holding period with a three-factor model as risk control, they use an alternative earnings surprise measures based on *"(i) the time-series of earnings; (ii) market prices; and (iii) analyst forecasts. Using each of the measures we find evidence of significant post-earnings-announcement drift, robust to alternative controls for risk and market microstructure effects (...) Our conclusion is that the UK stock market is inefficient with respect to publicly available corporate earnings information" (p.89).*

Livnat and Mendenhall (2006) with a sample from US stocks from 1987-2003, holding period of 4 quarters, using CAR as return metric, they obtained 5.21% PEAD return per quarter. Concluding that differences comparing the analyst forecast to time series may lead to mispricing.

Considering information uncertainty Francis et al. (2007) related with PEAD for the US stock market between 1982-2001. With a calendar time portfolio formation and 6 months holding period, using monthly alpha return metric and three/four factor model risk control, they establish a connection whereas stocks where the investors have less information and gain earnings with that create mutual initial reaction. Moreover, they found that idiosyncratic volatility predicts the profitability of PEAD.

This phenomenon of PEAD can be explained by several hypotheses. Among them, the most widely accepted explanation for this effect is that investors underreact to earnings announcements, and this anomaly does not adjust as quickly as it should (Daniel et al., 1998; Hong and Stein, 1999). Moreover, it is also widely believed that there is a strong connection between earnings momentum and price momentum (Chordia and Shivakumar, 2006) .

Supporting the momentum evidence on the stock market Chan et al. (1996) found that it is possible with earnings momentum strategy may benefit from underreaction to information on short-term earnings, while a price momentum strategy may benefit from the slow reaction of the market to response the arrival of the information, including the long-term profitability.

In additionally, several studies such as Sadka (2006) also showed that the liquidity risk could be one of the reasons of the earnings momentum as the Post-Earnings Announcement Effect appears to be strong in small cap stocks.

Another two main reasons have also been part of discussion as a cause of PEAD supported in the literature by authors such as Bernard and Thomas (1989) and Ball et al. (1988). One of the causes is the delay price in response to new information, most explained that traders do not use all available information or due to transaction and trading costs. The other cause is the misspecification of CAPM, this cause is not plausibly and it is most explained that this model to calculated abnormal returns is unfinished or wrongly estimated.

Many theories have been suggested and stated for reasons of this phenomenon since the first study of PEAD appointing for different arguments, but no consensus has been reached among the experts.

2.2 Value Anomaly

The Value Anomaly is one of the oldest anomalies of the markets and it consists to be the tendency of the value stocks outperforming growth stocks with the same level of risk. Graham and Dodd (1934) were the first to establish the concept of value anomaly by recognizing the importance of paying a low price for stocks and make a definition of these two types of stocks (value and growth) in their study.

The importance of paying low price for stocks came because value stocks systematically outperform growth stocks with the same level of risk. Although, smaller stocks are more difficult to value because they are riskier; have less information; more difficult to profit from that and have higher transaction costs, investors when are optimistic are willing to pay a lot for smaller stocks. Indeed, in times of recession investors are willing to pay more for value stocks because they have a better performance than growth stocks, while growth stocks are stronger in periods of expansion (Chan and Lakonishok, 2004).

If firms do not have a long historic about smaller stocks, it will affect the mood of the investors. The main explanations have to do with the sentiment. These stocks are also difficult to arbitrage because it is difficult to profit from that, once it has no derivatives.

Value stocks are low profile securities that are traded at a lower price relative to its fundamentals. This kind of stocks are characterized to have low (price-to-earnings; price-to-book; price-to-cash flow; dividends) and others measures of their fundamentals in relation to the market average (Fama and French, 1992; Fama and French, 1996). These stocks are considered to be part of investors that use contrarian strategies, once according to Fama and French (1992) they are fundamentally riskier. So, investors consider them to be underpriced and because of that they can produce superior returns in compensation for the risk.

The successful of this investment strategy is because they are contrarian to “naïve” strategies. These naïve strategies results from the lack of sense of the investor in reading the price market signs making an overreact or underreact in the process of the information. While, the contrarian investors bet against naïve investors because they invest in underpriced stocks and not in overpriced stocks by that outperforming the market (De Bondt and Thaler, 1985; Conrad, 1995).

Additionally, the value strategy with the value investment philosophy supported by Graham and Dodd (1934) as stated before contrary the efficient market hypothesis that says that the market incorporates all relevant information, making it impossible to profit from undervalued stocks.

On the other hand, glamour stocks are shares in a company whose their earnings and sales are growing faster than those in other companies and are expected to continue to growth. According to Bourguignon and de Jong (2003) this type of investment style requires to investors a longer time-horizon by looking companies in booming industries for the expectation of rapid growing earnings and sales. In this sense, this contradicts the value stocks whereas the investor uses their strategy in short-horizon expecting to achieve gains from price momentum.

From Lakonishok et al. (1994) study they found that one of the reasons why value stocks outperform growth stock is because investors overestimated future growth rates of glamour stocks relative to value stocks. They use sample of US stocks from the period 1968-1990, with a calendar time portfolio formation and with 12 months holding period, they used B/M; E/P; C/P and GS ratios as proxies to capture value anomaly. The results present a 10%-11% value anomaly per year with a long positive position and a short negative position.

In their study, they documented “value strategies” linking their higher returns to “overreaction hypothesis”. This happens because although, the evidence of mean reversion on growth forecast these strategies are contrarian investors and are able to exploit the naïve investors behavior or because they are riskier.

A challenge to the EMH is the individual’s reaction to news. The most valuable commodity that we can have is information and with that people tend to overreact or underreact. However, some investors could in turn take advantage of people’s reaction which create a market anomaly and use their expertise to take advantage by profiting with that. On the other hand, the overreaction and underreaction could be consistent with the efficiency market hypothesis if both split randomly (Fama 1998).

Investors overweight to new information because that newly information is salient and captures their attention, so it becomes important for them and have a heavy weight in terms of making decision resulting in overreaction whereas prices are pushed beyond the levels warranted by fundamentals.

On the other hand, investors that underweight the arrival of new information cause underreaction. In this sense, it is possible to affirm that there is a lack of incorporation of new information into stock prices such as earnings announcement and this underreaction continue until prices fully incorporate all information available.

Despite the evidence of overreaction and underreaction Fama (1998) says that both are equally common. This is not supported with the previous studies when both phenomena act in different time horizons.

However, this view is not consistent with Lee and Swaminathan (2000) showing that past trading volume provides an important link between “momentum” and “value” strategies, whereas these findings support the intermediate-horizon “underreaction” and the long-horizon “overreaction” effects.

The value anomaly is considered to be inconsistent with the CAPM model, once the value stocks tend to have higher expected returns than CAPM, while the growth stocks tend to have lower expected returns in comparison to the CAPM prediction.

2.3 Behavioral factors for Overreaction and Underreaction

The behavior of investors is related as an explanation of both reactions, as this factor is attributed as the cause of investors having overconfidence and biased self-attribution; representative heuristic; and to have bounded rationality concerning their overreaction to new information, while they are considered to have conservatism and bounded rationality concerning their underreaction to new information.

2.3.1 Overconfidence and biased self-attribution

Daniel et al. (1998) made a theory connecting the overconfidence to self-attribution bias, saying that this comes from the ability of the investors to think that they are smarter than the average and that they rarely make mistakes with their assumptions.

According to the authors, the investors weights their private information comparing to public signals. Depending on the confirmation or not of the signals is what makes them to overreact or underreact. Normally, their overconfidence makes them overreact due private information, they trade with the information that they have even is irrelevant to gain with that and only adjust slowly when public signals contradict it.

So, people are overconfident and that explains the excess volatility of asset prices because people overweight the information that they own.

The overconfidence and self-attribution also cause the continuing overreaction implying momentum in prices in the short-term, but the momentum is reversed when public information correct prices back to their fundamentals. So, stock prices are more volatile than fundamentals. Thus, these factors are also mean reversion in the long-term.

2.3.2 Representativeness heuristic

The representativeness heuristic was first theorized by Tversky and Kahneman (1974). This theory is used by people that take judgments and make decisions about the probabilities of an event under uncertainty. The authors of this theory argue that people rely on limited heuristic principles, reducing complex tasks of assessing likelihoods and predicting values to simple judgmental operation but sometimes they lead to severe and systematic errors. Nevertheless, the authors affirm that heuristics are useful because reduce our effort and time by simplifying our decision.

In contradiction, Gigerenzer (1996) disagree with the theory developed by Tversky and Kahneman (1974). He argues that this method explains everything and nothing at the same time, adding that the judgments and decisions should not take always be based in statistics and probabilities and it could be based made by asking questions of frequencies.

Later, Barberis et al. (1998) present a model of investor sentiment stating with the representativeness people think they see actual earnings follow a random walk and the investors do not understand this, creating an overreaction because if they see growing earnings of a firm and due the random path of the earnings they might not continue to growth. Thus, it is created disappointment once they overweight and underweight the information and as consequence get contradictions results.

2.3.3 Conservatism

Basu (1997) find evidence of conservatism in result of earnings reflecting more quickly “bad news” than “good news”.

Following that path, Barberis et al. (1998) based on the model previously stated, the investors are very stuck with their prior beliefs and for that they are slow to make adjustments of the underweight information and that contributes for the underreaction to new information.

These implications may lead to investors makes mistakes and assume that the firm is mean-reverting.

2.3.4 Bounded rationality

Bounded rationality is one of main behavior explanation of the investors and takes as consequence the creation of the overreaction and underreaction.

Hong and Stein (1999) defined two groups of boundedly rational agents: “news watchers” and “momentum traders”. The “news watchers” do not pay attention to prices, only to news and the “momentum traders” only look at past prices. So, both are risk averse because do not evaluate a part of the information available.

The news watchers adjust prices slowly only to new information, so there is only underreaction resulting in a combination of gradual information diffusion with the assumptions.

On the other hand, momentum traders want to profit from the underreaction caused by news watchers and they use simple strategies by looking only to past prices, so they are pushing the price of winners above their intrinsic value creating overreaction to any news.

Their model generates underreaction and price momentum in the short-term and overreaction and mean reversion in the long-term.

3. Methodology

In this chapter, it is described the methodology used for study. The first subsection presents the overall framework for this study, second and third subsections present the choice of models and formulas to apply for the study and test statistics, the fourth subsection explain the tests statistics and finally the fifth and the sixth section explain the proxies and subsamples used for this study.

3.1 Event Study

From the literature review chapter, it was possible to conclude that post-earnings announcement drift and value anomaly violates the semi-strong form efficiency market hypothesis. So, in this sense it is important to introduce an event study approach to test the performance of the capital markets. The underlying assumption of this approach is that capital markets is semi-strong form efficiency. For that, it is necessary to measure the valuations effects of the earnings announcements as well as examine the response of the stock price around the earnings announcement of the event by treating and process the data in MS Excel and ESM software.

The event study framework has not changed drastically since the late 1960's when Ball and Brown (1968) and mainly when Fama et al. (1969) introduced their methodology concerning the estimation of abnormal returns (AR) as important measure to test the market's efficiency in response to stock split announcements. Moreover, Fama (1991) states that event studies are an important part of finance and says that:

"Event studies are the cleanest evidence we have on efficiency" (Fama, 1991, p. 1602).

An event study more specifically, show the analysis and evidence of the impact of news and events related directly or indirectly to the company, its stocks as well as the industry, sector or overall market and any capture of the abnormal returns may result a detection of markets' inefficiency. If markets are informationally efficient, then the event should reflect immediately on the announcement date and not on the following trading days. That is why event studies are often considered to test the efficiency of the market.

There are short (< 1 year) and long-horizon (> 1 year up to 5 years) event studies. The short-horizon event studies are more reliable than the long-horizon event studies. Although the long-horizon event studies have been improved in last years, Kothari and

Warner (1997) say that these event studies still involve many issues and there is still a path to improve.

In order to construct an event study, it is necessary to design an event study timeline. In this sense, following the standard event study technique by Brown and Warner (1985) there are three important periods to define. Firstly, the estimation window, also as known as the control period, whereas estimate the market model which is used to determine the normal behavior of a stock's return in comparison with the market or industry index and it is normally used the regression model to determine this "normal" behavior. Secondly, the event window whereas it often starts a few trading days before the actual event day happen and length it is usually centered on the announcement. Based on actual returns during the event window and the "normal returns" predicted, "abnormal returns" are calculated for all days with the event window. This period of the timeline along with the abnormal returns are important to examine if whether the event announcement was anticipated, leaked or if the "post-announcement effect" needed more time to absorb the information content of the event and another reason is if the material of the event was relevant for the content in cause.

Finally, we have the post-event window which is considered when a company makes an announcement or when an event significant occurs that makes impact on the market and this also allow us to measure the long-term impact of the event. Normally, the post-event window is associated to investigate the performance of the company following announcements when a major acquisition or an IPO happens.

For this event study the firms of the market extracted from the United Kingdom will be used the quarterly earnings announcement. Additionally, this study focuses on 23 quarters from 2010Q1 to 2015Q3 and for the firms that announce earnings during the trading day, the event date will be the date of the announce and if the firms announce after the closing bell the event date will on the following day. Moreover, Jones and Litzenberger (1970), Foster et al. (1984), Bernard and Thomas (1989) and Yan and Zhao (2011) confirm the importance of collecting quarterly data as well the earnings surprise factor to exploit the post-announcement security return results. Since, the aim is to investigate the post-event window where possible post-announcement drift can occur and as we know the drift is commonly seen within 3-months after the earnings announcement.

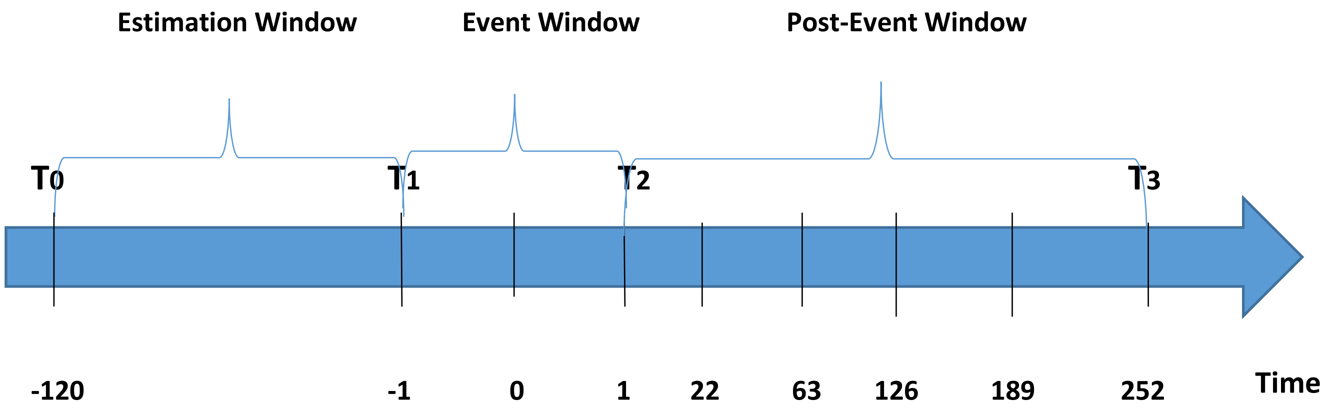
The estimation window should be chosen in a way that the returns are not compromised with their performance with the event. Armitage (1995) suggest that the estimate period should range from 100 to 300 days. But, MacKinlay (1997) says that for the most common model, the market model, for the measure of normal returns it should be implemented an estimation window with a size of 120 days. We decided to follow Mackinlay (1997) and use the 120 days, since it also belongs to the period range purposed by Armitage (1995).

As it concerns to the event window will be similar to Yan and Zhao (2011), it will be looked the drift starting from the second day after the current quarter´s earnings announcement and ends on the second day prior to the next quarter´s earnings announcement. The same approach of the author will happen for the post-event window in examine drift patterns in each sub-sample in the subsequent periods, starting from the second day after the earnings announcement up to 1 month (22 trading days), 3 months (63 trading days), 6 months (126 trading days), 9 months (189 trading days) and 1 year (252 trading days) after the earnings announcement.

Thus, in this sense this should be long enough to calculate meaningful estimates of normal returns. Otherwise, a shorter sub-sample could affect the construction of expected returns. So, the choice of this event study as short-term is perfect to exclude any confounding effects and the sub-samples are long enough to capture any significant effect of the event.

The timeline for event study is illustrated in figure 1

Figure 1 - Timeline for event study



Source: Own Creation

3.2 Models for Measuring Normal Performance

The event studies are used to measure the impact of a specific event on the value of firms or prices. That is why it is necessary to choose the appropriate normal return model.

MacKinlay (1997) describe that there are two categories of models to be followed in order to estimate normal returns: statistical and economic. In additionally, he says that the former category follows from statistical assumptions concerning the behavior of asset returns and do not depend on economic arguments. On the other hand, the latter category relies on assumptions concerning on investors' behavior and are not based only on statistical assumptions. However, it is needed to add statistical assumptions to put the economic model in practice. We followed the statistical model.

3.2.1 Statistical models

The right and the most popular model according to the financial literature for an event study determine that this thesis will rely on the Market Model in the calculation of the expected normal returns.

The Market Model is probably the most common approach to construct expected returns. It is a more slightly sophisticated approach in which the return on a security depends on the return on the market portfolio of security's receptiveness as measured by beta. In this sense, this model will overcome the impact of general market movements in a rudimentary way, once this model assumes a constant and linear relation between individual asset returns and the return of a market index. The use of this model compared with the former model reduces variance of abnormal return, which implies more powerful tests (CLM, 1997).

$$Ri,t = \alpha i + \beta i\ (Rmt) + ei,t$$

With

$$E[ei,t] = 0 \text{ and } VAR[ei,t] = \sigma^2 \varepsilon i \quad (3.2.1.1)$$

Ri,t is the return on asset i on period t, Rmt is the return on portfolio m on period t, αi is the intercept of the value of Ri when Rm equals to zero, βi is the slope (estimate of the systematic risk for asset i), ei,t is the zero mean error term on the security i on the period t. Moreover, the variance (σ^2εi), beta (βi), alpha (αi) and the error term (ei,t) are the parameters of the model, estimated by the Ordinary Least Squares (OLS) method. These parameters are estimated in the estimation period for each observation. The formulas for the estimation of the parameters can be seen in equation 3.2.1.1, Appendix B.

In the Brown and Warner (1980) paper, they observed stock return data into various methodologies in event studies to measure security price performance based by the examination of the frequency of type I and type II errors and calculating the power of each methodology. Their findings prove that a simple methodology based on the market model performs well under a wide variety of conditions and the use of more sophisticated models can result in false inferences about the presence of abnormal performance.

Based on these evidences, the right and the most popular model in the financial literature determine that this thesis will rely on the Market Model in the calculation of the expected normal returns.

3.3 Estimation of the Market Model

Through the choice of the market model with the appropriate estimate procedure (OLS) for the parameters made in the previous sub-section, the respectively choice of methods and calculations for this model will be deeply explained in the following sub-sections considering the choice of the UK stock market (London Stock Exchange).

3.3.1 Abnormal Returns

The abnormal returns are the difference between the actual return and expected return from the market movements, making them as essential measure to evaluate the impact of an event. In this way, these measures are important to help in auditing for a conclusion if a portfolio manager's skills on a risk-adjusted basis and if the investors were appropriately compensated for the risk that they assume. The abnormal returns can be calculated by the following formula:

$$ARi,t = Ri,t - \hat{\alpha} - \hat{\beta}_i R_{mt} \quad (3.3.1.1)$$

Where, ARi,t is the abnormal return, which is the disturbance term ε_{it} in the event window of the market model for firm i at the period t, Ri,t is the actual return for firm i at the period t and the $\hat{\alpha}$ - $\hat{\beta}_i R_{mt}$ is the expected return for firm i at the period t.

The daily stock returns are used with the logarithmic function to make the return distribution, converge to normality and to eliminate negative returns according to the market model and the tests used. This is consistent with the findings of Corrado and Truong (2008) were they found that the logarithmic returns perform better test specification in event studies. The daily logarithmic return for both stock and market are calculated in the following formula:

$$Ri,t = \text{LN}\left(\frac{Stock\ price\ t}{Stock\ price\ t-1}\right)\ ;\ R_{mt} = \text{LN}\left(\frac{Market\ index\ price\ t}{Market\ index\ price\ t-1}\right) \qquad (3.3.1.2)$$

Where, Ri,t is the logarithmic return of the stock i for the period t divided by the logarithmic return of the stock i for the day before the period t. The same applies for the market formula, R_{mt}.

There are two different measures to aggregate abnormal returns that normally used in the finance literature for an event study: BHAR (Buy-and-Hold Abnormal Returns) and CAR (Cumulative Abnormal Returns).

The BHAR model is based on the principle of the long-term where it gives the best returns. This kind of model is calculated by the difference between the realized buy-and-hold return and the normal buy-and-hold return and it is often used for long-term event studies such as IPO or when a major acquisition happens (Loughran and Ritter, 1995; Fama, 1998). Furthermore, Barber and Lyon (1997) and Lyon et al. (1999) advocate this model and say that the BHAR model better match the investor investment experience and eliminates the problem of cross-sectional dependence among the sample firms.

However, this method requires a benchmark sample or matching stock that have not experience the event. Since, as it was said before every firm of the sample report their earnings quarterly, semi-annual or even annually and because of that the latter requirement is impossible to do. Besides that, we want to study earnings announcement, so every firm will experience the event at some day. Moreover, the MSCI UK was chosen as index for this study instead of the benchmark because we believe it measures with more precise all the constituents of the LSE stock market and it seems more appropriate for this kind of study.

While it is true that BHAR perform better for long-term studies, it is also true that the CARs perform better for short-term studies. Furthermore, Fama (1998) argues in favor of the use of CARs instead of the BHARs given the theoretical and statistical considerations. For these reasons, we decided to use the Cumulative Abnormal Returns method.

3.3.2 Cumulative Abnormal Returns

A hierarchy of abnormal returns calculated are compounded to cumulative abnormal returns (CARs), which can be averaged to cumulative average abnormal returns (CAARs) in cross-sectional studies.

The cumulative abnormal return method is normally used to determine how accurate the model is. More often, it is used to investigate the impact of any affect extraneous events on the stock prices. In additionally, Kothari and Warner (2008) say that for testing the semi-strong form of EMH, this measure should be used in order to see how fast the market react to new information.

The CARs method is the sum of the abnormal returns of the stock i at the period t and it is represented as:

$$CARi(T1, T2) = \sum_{t=T1}^{T2} AR\, i, t \quad (3.3.2.1)$$

Where, the cumulative abnormal returns over a multi-period event window by summing the average returns from the period T1 until the period T2. This can also be applied to the post-event window starting from the period T2 and goes until the period T3.

Following, the analysis performance of abnormal returns for multiple events it may give typical stock market response patterns. So, the typical abnormal returns associated with a specific period of time of N events before and after the event day give us the following formula for average abnormal returns:

$$AAR = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t} \quad (3.3.2.2)$$

After following the abnormal, cumulative and average returns formulas we are able to form the cumulative average abnormal returns (CAARs) where it has great statistical analysis importance in addition with the AAR because it assembles the effect of the abnormal returns. The CAAR based on cross-average measure for both event-window and post-window is defined by the following formula:

$$CAAR\ (T1, T2) = \frac{1}{N} \sum_{i=1}^{N} CARi(T1, T2) \quad (3.3.2.3)$$

The statistical tests considering these measures will be approached deeply in the following section.

3.4 Test Statistics

The power of using test statistics is very accurately in precisely the capture of any abnormal returns that differ from zero with some statistical validity. The literature on event study test statistics is very rich, as well the significance tests. CLM (1997) claim that:

"The significance of using statistical test on an event study is the ability to detect the presence of false null hypothesis. Thus, the likelihood that an event study test rejects the null hypothesis for a given level of abnormal return associated with an event is the power of the test" (CLM., 1997, p.168).

The CAARs use the T-Tests to test the efficiency of the markets, this is the hypothesis of the CAARs being or not equal to zero defined as:

Ho: CAAR = 0 H1: CAAR $\neq$ 0

Hence, the rejection of H0 confirms a presence of anomalies in the market. A rejection of H1 confirms otherwise.

This study, will include three different statistical tests in order to achieve the main purpose of the investigation. One parametric tests (Standardized Residual Test) and two non-parametric tests (Rank Test and Generalized Sign Test).

Parametric tests assume that the individual firm's abnormal returns are normally distrusted. So, it makes more assumptions and the parametric data underlies on normal distribution, which allows to make more conclusions. Campbell and Wasley (1993) say that the normality of abnormal returns is a key assumption underlying to use the parametric tests for event studies. The non-parametric tests are based on a fewer assumptions and for that are less powerful than the parametric tests. However, Corrado (1989) on his paper describe statistic superiority of non-parametric tests over parametric tests in the returns case has been documented even departures from normality are not pronounced.

The following sub-sections will describe deeply each of both parametric and non-parametric tests to be used.

3.4.1 Parametric Tests

The parametric test used for this event study was the standardized residual test because is the most popular parametric statistical test, once it has been found more robust considering possible volatility changes associated with the event. For details about this parametric test could be found in the following description.

T1: Standardized Residual Test

The Standardized Residual Test also as known as the Patell Test is a complement of the cross-sectional independence test. It was developed by Patell (1976) and the standardization reduces the effect of the stocks with large returns, it assumes cross-sectional independence in abnormal returns and assumes that there is no event induced change in the variance across of the event period of abnormal returns. It is estimated as:

$$SARi,t = \frac{AR\ \mathrm{i,t}}{S(AR\ \mathrm{i,t})} \quad (3.4.1.1)$$

Where the standard deviation is according to his facts that the event-window abnormal returns are an out-of-sample forecast and the standard error is adjusted by the forecast error:

$$S^2_{ARi,t} = S^2_{ARt}\left(1 + \frac{1}{Mi} + \frac{(Rm,t - \bar{R}m)^2}{\sum_{t=0}^{T1}(Rm,t - \bar{R}m)^2}\right)$$

After calculating SAR, we have:

$$SCARi = \sum_{t=Ti,T2}^{T2} SARi,t$$

And finally, to get the patell test:

$$T1\ CAAR = \frac{1}{\sqrt{N}}\sum_{i=1}^{N}\frac{SCARi}{S_{SCAR_t}}$$

With,

$$S^2_{CSARt} = L_2\,\frac{Mi-2}{Mi-4}$$

Boehmer et al. (1991) found that under the absence of an event induced variance increase, and that this test is well specified and has appropriate power.

3.4.2 Non-Parametric Tests

The following non-parametric test for this event study are the rank teste and the generalized sign test, which could be found in the following description.

T2: Rank Test

The Corrado (1989) Rank Test consider a combination of both post and event window as well the estimation period into a single set of returns and ranked them based on return to each daily for each firm: $K_{i,T} = rank\ (AR_{iT})$, where t = -120, …, 252. This test ranks from the lowest abnormal return until the highest abnormal return. To get the rank test, we need to follow the following steps:

$$\overline{K}_{T1,T2} = \frac{1}{L2} \sum_{t=T1+1}^{T2} \overline{K}_t, \text{ where } \overline{K}_t = \frac{1}{N_t} \sum_{i=1}^{Nt} Kit \quad (3.4.2.1)$$

Where, statics test is:

$$T2\ CAAR\ = \sqrt{L2}\ (\frac{\overline{K}_{T1,T2}\ - 0.5}{S_{\overline{k}}}\ )$$

And for standard deviation, we have:

$$S_{\overline{k}}^2\ \frac{1}{L1+L2} \sum_{t=Ti}^{T2} \frac{Nt}{N} \left(\overline{k}_t - 0.5\right)$$

T3: Generalized Sign Test

The Generalized Sign Test is an improvement of the Sign Test and was adopted by Cowan (1992), where it compares the proportion of positive AR around an event to a proportion that was not affected by the event. So, it allows the null hypothesis having positive AR to be different from 0.5. Moreover, this test is a binomial test whether this positive AR equals to 50% or not.

The generalized sign test provides more powerful than a parametric test based on standard errors from cross-section of event date abnormal returns and becomes more powerful as the length of the event window increases (Cowan, 1992).

It is calculated with the following formulas:

$\hat{p} = \frac{1}{N}\sum_{i=1}^{N}\frac{1}{L1}\sum_{t=Ti}^{Ti}\varphi_{it}$ where, φ_{it} = 1 if the sign is positive, and 0 otherwise. (3.4.2.2)

And the GST is:

$$T3\ CAAR\ = \frac{(w - N_{\hat{p}})}{\sqrt{N_{\hat{p}}(1-\hat{p})}}$$

Where, w is the number of stocks in the event window for which CAR is positive.

3.5 The Value Anomaly Proxies

Following the Lakonishok et al. (1994) and the Yan and Zhao (2011) studies, we will use the four empirical proxies to capture the value anomaly effect: book-to-market (BM), earnings-to-price (EP), cash-flow-to-price (CP) and sales growth (SG). As we already know, the value stocks are characterized for having high (book-to-market; price-to-earnings; cash-flow-to-price) and low sales growth, while in the opposite way is classified for the growth stocks.

The use of these multiples to make classification on the value anomaly is recognized by several scholars (see e.g., Fama and French (1993); Lakonishok et al. (1994) Barberis and Shleifer (2003); Bourguignon and de Jong (2003)).

In additionally, Fama (1998) says that these multiples produce stable results in returns. However, the dividend-to-price (D/P) is also used by these authors, but the problem of this proxy is that produce a weaker performance compared with the other multiples.

The book-to-market compares the book value of a firm to its market value. According to Fama and French (1992) this measure has a strong role in explaining cross-sectional average returns on the stocks of the stock exchange. Moreover, Fama and French (1995) say that the market and size factors can explain the behavior of earnings, but there is no link between the B/M factors in earnings and returns.

Regarding the earnings-to-price compares the P/E of a stock to a cumulative P/E of a related market index. This is useful because it helps if the performance of a stock was adequate or not to the overall market performance. Basu (1983) shows that E/P also help to explain the cross section of average returns, and Ball (1978) argues that E/P is a catch-all proxy for unnamed factors in expected returns (Fama and French, 1992).

The cash-flow-to-price compares the amount of cash-flow generated to the price of a company. It offers to investors a useful tool to look to the company's value more than P/E because it not includes the depreciation effects as well as the accounting differences related with depreciations. According to Bodie et al. (2009) this ratio is important as multiple because it defines the expectation of a stock's firms price to reach when generates a certain level of cash flow.

Finally, we have the sales growth in which following Lakonishok et al. (1994) it consists as the average of annual growth in sales over the previous five years. It is useful because it determines trends and how investors are prone to regard a stock with low cash flow relative to price and high past sales growth as having more promising future growth prospects (Chan and Lakonishok, 2004).

The positive and negative of the multiples could be considered by scholars as a neglect. Fama and French (2007) argue that both signs are largely unexpected, while Huang et al. (2012) say that negative multiples causes noise to the sample. Nevertheless, we will be consistent with Lakonishok et al. (1994), Desai et al. (2004) and Yan and Zhao (2011) studies and not remove the EP and CP ratios because the negative of these multiples has increased in recent years and if we cut it will imply a huge cut for the final sample (Collins et al. 1999). However, we will eliminate the negative book-to-market ratios.

3.6 Market Expectations and Surprises

In order to form portfolios and detect market reaction to the event, we will follow LaPorta et al. (1997) and Yan and Zhao (2011) approach and use the Earnings Announcement Abnormal Return (EAAR).

The market expectations have influence on how the investor or investment managers allocate their assets in a portfolio considering the expected risks and returns, whereas these assumptions increase when the assets allocated are exposed to favorable scenarios, and decrease when assets allocated are exposed to unfavorable scenarios. So, when the market expectations are taking into account it is seen as a crucial undertaking.

In this way, the time sensitivity is a crucial factor that can shift the market expectations due to the tendency for data to modify in response to a large range of factors. Therefore, based on the number of observations and the group of EAARs to form portfolios, the market expectations signs will result on the outcome of the capture sign of the EAARs. This is, when there is a negative sign of the market expectation, the same sign will have the EAARs as so when there is a positive sign of the market expectation, the same sign will have the EAARs:

- Negative Market Reaction (-): EAAR < 0
- Positive Market Reaction (+): EAAR > 0

As concerning the importance of the market expectations Fried and Givoly (1982) in their study measure the performance of an alternative surrogate for the same and knowing from a previous study that they made in which analysts' forecasts have information content, their results indicate prediction errors are more associated with the price security movement and with that they were able to conclude that:

"Analysts' forecasts provide a better surrogate for market expectations than forecasts generated by time-series models" (Fired and Givoly, 1982, p.85)

The main reason, according to the authors why time series models as an alternative for the market expectations are not so reliable is because is further impaired by the underlying assumptions that the earnings generating process are stationary along with stable parameters and the characteristics of the model is applied to all firms involved.

In the literature, there is a distinguish views to apply EPS surprises method, some use for time series models while others use for analysts' forecasts.

Skinner and Sloan (2002) show that growth stocks exhibit an asymmetric response to earnings surprises. Demonstrating, that while growth stocks are at least as likely to announce negative earnings surprises as positive earnings surprises, they exhibit an asymmetrically large negative price response to negative earnings surprises.

While, Brandt et al. (2008) state that earnings surprises represented by SUE do not represent all the stock abnormal returns around the earnings announcement date. Adding to that, the 14%-15% of the firms subject it to SUE approach experience extreme announcement returns in exactly the opposite direction of the earnings surprise.

We will rely and follow the method provided by Yan and Zhao (2011) based on the analyst forecasts.

The formula that they used can be translated as the difference between the reported EPS and the expected EPS, divided by the absolute value of the expected EPS[1]:

$$Earnings\ Surpriseiq = \frac{Reported\ EPSiq - Expected\ EPSiq}{abs(Expected\ EPSiq)} \quad (3.6.1)$$

Where, Reported EPS i,q is the actual EPS announced on the earnings announcement date for firms i in quarter q, and the Expected EPS i,q is the mean analyst forecast of EPS for firms i in quarter q. All divided by the absolute value of the Expected EPS i,q.

The strategy implemented is conditioned on the signs of EAARs (+/-) and ES EPS (+/-/0), where it will combine with the Value Anomaly subsample to form the final portfolio. Picking from the period sample and sort the stock into quintiles based on the value anomaly proxies, we will then allocate each stock into six subsamples based on the signs of both measures: When both are positive and negative; positive EAARs and negative ES EPS and vice versa; positive EAARs and zero ES EPS and negative EAARs and zero ES EPS.

Following this, the observations are grouped in three groups defined by the sign of the EPS Surprise, as it is possible to see below:

- Negative Surprise (-): EPS Surprise < -1%
- Consensus (=): EPS Surprise > -1% < 1%
- Positive Surprise (+): EPS Surprise > 1%

An EPS Surprise below 1% is considered negative surprise, while the opposite happens when an EPS Surprise is above 1% turning them as a positive surprise. When there is case where the EPS Surprise is located between -1% and 1%, this is considered to be in line with the consensus.

For all four proxies of this work there is a variation below, consensus and above of 1%, except for the EP proxy where there is a variation below, consensus and above of 2% due

[1] Expected EPS is based on projections estimated of the sum of the mean analysts' forecasts. This is estimated for each company recording 3 days prior to the announcement.

to the number of observations observed and the selection of the final sample events. This line is designed to detect errors, so it can be possible to correct errors in the EPS forecast values. In this way, these three groups are formed to gain more robust, facilitate the division of groups analysed and to have roughness to find any possible difference of imbalance between the extremes.

With the measures of Earnings Announcement Abnormal Return and the EPS Surprised grouped and formed, both combined based on the signs of the two measures we have a new sample split into six subsamples, which combined with the value anomaly proxied form the final portfolios for this study.

Some authors, such as Jegadeesh and Livnat (2006) find that the drift may not be so strong because is very difficult to confirm future information to the original earnings surprise. Others, as Kinney et al. (2002) claim that earnings surprise is not a good indicator for market reactions for earnings announcement.

In order to contradict this distortion of results, besides the initial six sub-samples we will add two more subsamples aside by including negative and positive earnings announcement abnormal return

Finally, according to Johnson and Zhao (2011) there is a muted drift in the post-window compared with the event-window thankful to the decrease of earnings surprise. So, the decision to include the two subsamples of EAAR will lead to larger samples, more strengthening tests statistics and robustness to the initial six subsamples (EAAR/ES).

4. Data and Descriptive Statistics

Having the methodology presented for this study, this chapter will serve to introduce and explain the data selection process described in section 4.1 as well to describe and analyse all the statistical data from the data chosen for all subsamples and proxies of this study mentioned in section 4.2.

4.1 Data Selection

The United Kingdom owns the main stock market exchange in Europe and one of the oldest and most important stock exchange markets in the world. Moreover, the London Stock Exchange, alongside with Deutsche Böerse and the Euronext Group represent more than 80% of market capitalization and listings companies in Europe. Furthermore, the London Stock Exchange owns by itself the third largest market capitalization in the word with over than £6 trillion and owing more than 2000 listings companies.[2]

The London Stock Exchange has multiple markets. It is essential divided by two parts: LSE Main Market which is usually for large and established companies and the other part is the LSE AIM Market, which is more appropriate for smaller and growing companies. Each of them represents 52% and 48% respectively of the London Stock Exchange.

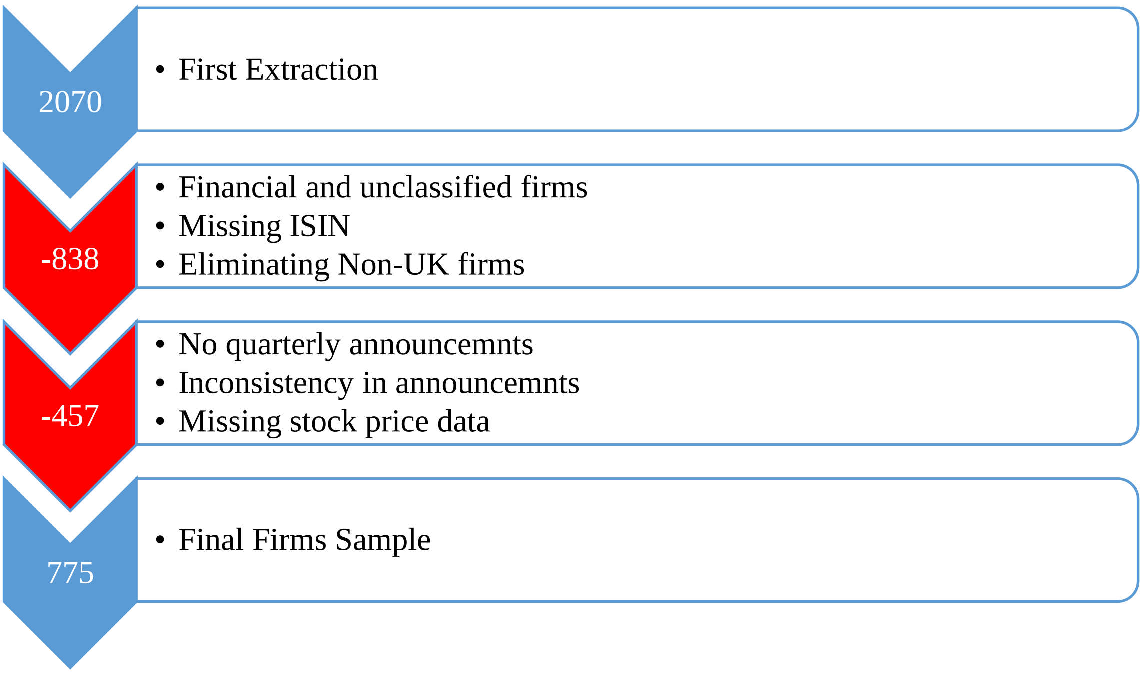
The Thomson Reuters DataStream and the London Stock Exchange official website were used to collect data. Most of the data was withdrawal by DataStream once is owns the larger part essential of static data as timeseries data and the LSE website was essential to complete the data already retrieved, which was essential to have the right variables such as date of incorporation for the regression analysis.

The first extraction results in all companies available in DataStream for the LSE, which resulted in more than 2000 firms. After a process of selection for missing ISIN, financial[3] and unclassified firms, missing and inconsistency data such quarterly announcements and stock price result of a total of 775 final firms as is it illustrated in figure 2.

[2] http://www.londonstockexchange.com/statistics/companies-and-issuers/companies-and-issuers.htm

[3] Financial firms follow another Accounting principles, which may lead to a misinterpretation to approach for this study.

Figure 2 - Sample Selection



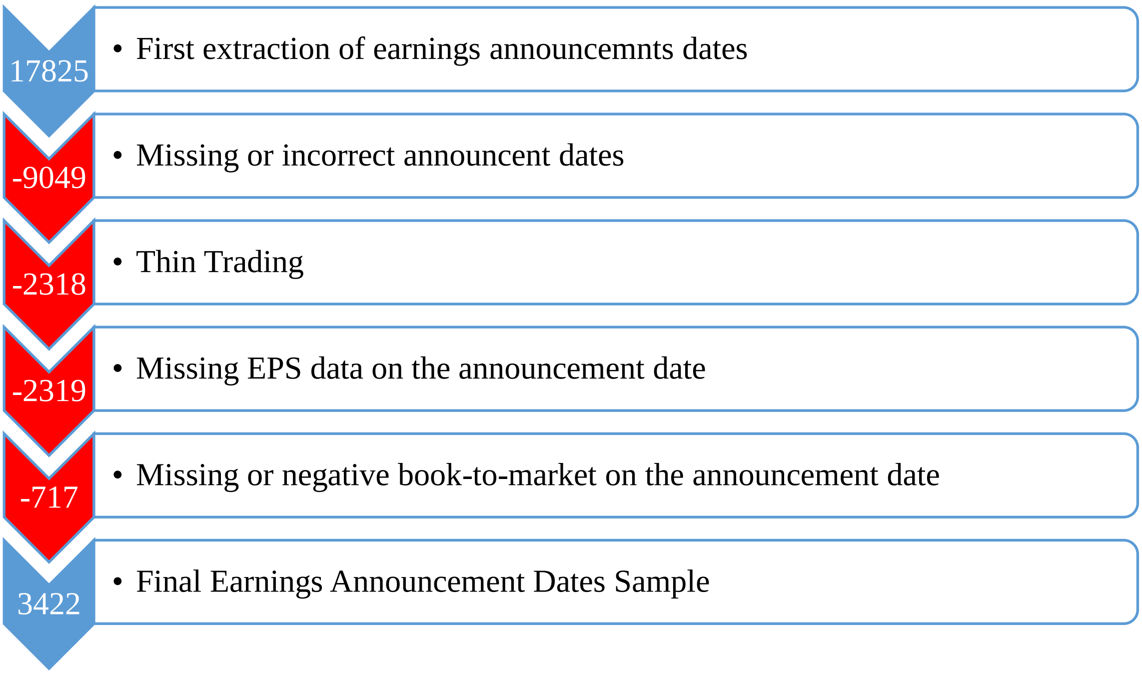
Source: Own Creation

The sample was extracted through DataStream to be analysed during the period between 2010Q1-2015Q3 which with the extension for years withdraw to 2009-2016 for the analysing of the estimation window and the post-event window for this study. Which is ideal because it covers all kind of events that happened during these period: the beginning of the financial crisis, the post-financial crisis and the pre-brexit.

Firstly, after the selection of firms the sample was sorted for thin traded stocks. This is done by observed the turnover by volume. So, all stocks during the event date that represent less transparency and low liquidity are eliminated with a requirement considering the frequency of trading. The elimination of stocks that are traded with less than 80% of frequency are considered as thin traded.

As it was said in the previous chapters the MSCI UK was chosen for this study and as well the other values such as EPS data, quarterly announcements and the data respectful to the proxies' book-to-market; earnings-to-price; cash-flow-to- price and sales growth was obtained from DataStream to get the final sample observations of the event as it is possible to observe in the figure 3.

Figure 3 - Final Sample Selection for the Events



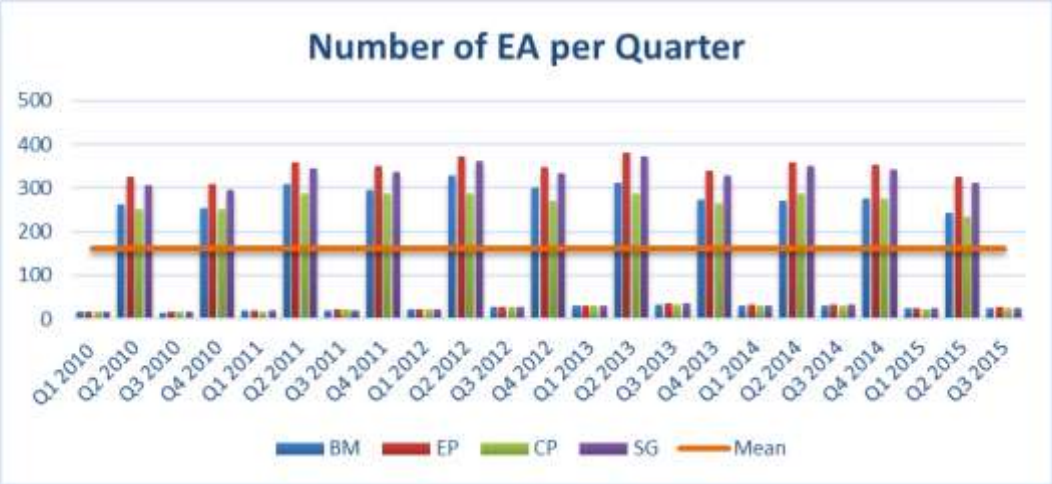
Source: Own Creation

Besides the book-to-market, the other proxies such as the earnings-to-price, cash-flow-to-price and sales growth also belongs to this study. Followed by Yan and Zhao (2011), in the case of the last three proxies we did not eliminate negative values finding a final sample observation of 4139, 3286 and 3994 with 0, 853 and 145 missing values respectively. Moreover, the market values were also extracted for a study of a robustness test. For a complete list of data extraction please see appendix A.

4.2 Data Statistics

With the final selection made for all four proxies during the 23 quarters, now it is possible to see the distribution of the events as it is illustrated in the figure 4.

Figure 4 - Number of Earnings Announcement per Quarter



Source: Own Creation
Note: Figure 4 represents the number of earnings announcement per quarter of each proxy from 2010Q1 until 2015Q3

In the above figure, is easy to see a preference of companies to report semi-annually their earnings announcements, while only a small portion report quarterly. So, it is easy to conclude that for all proxies observed the first and the third quarters are the least represented in this figure, while the second quarter seems to be where it meets the higher number of earnings announcement, gained only by a few number of EA released per quarter in comparison to the last quarter. Moreover, the average of EA per quarter is located around the 160, where the Q1 and Q3 are clearly below the average while the Q2 and Q4 are above.

To sum up, is to notice that in the second quarter of 2012 and 2013 represent the higher number of earnings announcement with around 320, 390, 290 and 380 for BM, EP, CP and SG respectively and in the opposite direction the Q1 and Q3 of every year represented around 10-20 of EA in all proxies.

In table 1 reports the frequency of the signs for each variable and subsamples as concerning the EAAR and the ES corresponding for each proxy.

Table 1 - Frequency of the Subsample signs

Panel A - BM					Panel B -EP				
Sign	**ES>0**	**ES=0**	**ES<0**	**Total**	**Sign**	**ES>0**	**ES=0**	**ES<0**	**Total**
EAAR>0	269	60	1711	**2040**	**EAAR>0**	287	119	2022	**2428**
EAAR<0	182	43	1157	**1382**	**EAAR<0**	213	79	1419	**1711**
Total	**451**	**103**	**2868**	**3422**	**Total**	**500**	**198**	**3441**	**4139**
EAAR>0	8%	2%	50%	**60%**	**EAAR>0**	7%	3%	49%	**59%**
EAAR<0	5%	1%	34%	**40%**	**EAAR<0**	5%	2%	34%	**41%**
Total	**13%**	**3%**	**84%**	**100%**	**Total**	**12%**	**5%**	**83%**	**100%**
Panel C - CP					**Panel D - SG**				
Sign	**ES>0**	**ES=0**	**ES<0**	**Total**	**Sign**	**ES>0**	**ES=0**	**ES<0**	**Total**
EAAR>0	254	58	1632	**1944**	**EAAR>0**	284	87	1989	**2360**
EAAR<0	181	40	1121	**1342**	**EAAR<0**	212	53	1369	**1634**
Total	**435**	**98**	**2753**	**3286**	**Total**	**496**	**140**	**3358**	**3994**
EAAR>0	8%	2%	50%	**59%**	**EAAR>0**	7%	2%	50%	**59%**
EAAR<0	6%	1%	34%	**41%**	**EAAR<0**	5%	1%	34%	**41%**
Total	**13%**	**3%**	**84%**	**100%**	**Total**	**12%**	**4%**	**84%**	**100%**

Note: From each panel we have the frequency of Earnings Announcement Abnormal Return and Earnings Surprise combining six subsamples signs for each proxy: book-to-market (BM); earnings-to-price (EP); cash-flow-to-price (CP) and sales growth (SG).

In this table from panel A-D represent all the proxies, in which it is reported based on the observations selected. We can see a small percentage on the consensus and positive earnings surprise with around 3%-5% and 12%-13% respectively against the 83%-84% of negative earnings surprise. This could be explained by the earnings forecast uncertainty due the period of time selected and could also meaning a suspicious of firms “manipulating” their earnings due to a small positive earnings surprise.

Meanwhile, the EAAR seems to be more even, with about 59%-60% against 40%-41% when EAAR is positive and negative respectively making a difference of less than 700 observations in total between them. Even so, this could mean a size problem, since small companies are the ones who normally exhibit greater abnormal returns. Nevertheless, the values are close due to the corrections made on the sample selection regarding with firms with liquidity problems.

The table 2 shows a statistical analysis of the full sample observation for each proxy.

Table 2 - Summary Statistic

Panel A Descritive statistics						
Variable	**Obs**	**Mean**	**Median**	**Std**	**Min**	**Max**
MV	4139	6812.60	862.41	18507.97	1.12	165829.01
BM	152	0.78	0.49	1.65	0.00	18.95
EP	4139	0.04	0.06	0.52	-26.72	6.69
CP	3286	0.17	0.04	11.36	-526.32	222.22
SG	3994	0.13	0.08	3.48	-50.00	100.00
Panel B Descriptive statistics						
Variable	**Obs**	**Mean**	**Median**	**Std**	**Min**	**Max**
ES_BM	3422	-35.66%	-12.07%	332.94%	-967.23%	1223.75%
ES_EP	4139	-46.03%	-12.81%	370.30%	-967.23%	1223.75%
ES_CP	3286	-39.19%	-11.93%	340.74%	-700.00%	1223.75%
ES_SG	3994	-41.68%	-41.68%	338.95%	-892.00%	1223.75%
EAAR_BM	3422	0.83%	1.09%	7.16%	-55.55%	43.00%
EAAR_EP	4139	0.67%	0.97%	7.65%	-85.67%	53.73%
EAAR_CP	3286	0.78%	1.03%	6.90%	-69.21%	43.00%
EAAR_SG	3994	0.74%	1.01%	7.48%	-85.67%	53.73%

Note: Table 2 for panel A and B report the summary statistics for the full sample of key variables from 2010Q1 until 2015Q3. Obs: total number of quarter firm observations. MV: the market value of equity in million pounds. It is defined as the outstanding shares multiplied by the price of the stock. BM: book-to-market ratio. EP: earnings-to-price ratio. CP: cash-flow-to-price ratio. SG: annual average growth in sales over the previous five years. In table B reports the earnings surprise and the earnings announcement abnormal return in event window (-1;1) of each proxy (book-to-market; earnings-to-price; cash-flow-to-price and sales growth) used as a final sample selection. For details about the use of formulas in panel B please go to the chapter 3.

The table 2 represents the descriptive statistics of all variables used for this study concerning the number of observations, mean, median, standard deviation, minimum and maximum in panel A, as well the ES and EAAR of all four proxies in panel B.

In panel A, reports a total of 18980 firm-quarter observations among all variables during the sample period between 2010Q1-2015Q3. The mean and the median for BM is much larger than comparing with other three proxies with 0.77 and 0.47 against between 0.04-0.17 for the mean and 0.04-0.08 for the median respectively. Both means and medians are slightly larger comparing the findings of Yan and Zhao (2011) and smaller than those in Desai et al. (2004).

Still, to notice in panel A that the minimum and maximum value for the market value as a range of 1.12-165,829 £M.

As for the panel B, the EAAR has a mean and median 0.67%-0.83% and 0.97%-1.09% respectively for all proxies which is considered to have a positive skewed distribution, while on the other hand, the quarterly earnings surprise is negative skewed with a range of -36% and -46% for the mean and -12% and -41% respectively. These findings are consistent with Yan and Zhao (2011).

5. Empirical Evidence

In this chapter will be conducted a test for normality to strengthen the parametric tests in section 5.1. Secondly, we will analyse the sample observations of their initial reactions in the event and post-earnings announcement drift in section 5.2. Thirdly, the results of all proxies will be analyse for their signs and respective portfolios in section 5.3. Last, but not least the regression analysis will be made to explain any underlying factor caused by the drift in the conducted study in section 5.4.

5.1 Normality Test

The reason why the normality test was chosen, is to see in terms descriptive statistics if the measure of data was perfectly matched with the normal model. In this way, we can judge if the data was or not well modeling by a normal distribution.

Based on parametric tests, the normality test is as all parametric tests more powerful than the non-parametric tests. So, it will bring stronger results in detecting any smaller difference in the sample size.

To test the normality of the data, the Jarque-Bera test was chosen to statistical analysis for the goodness-of-fit test. This test was used for all post-event windows, as well for the event window (-1,1). The formula is described below in the following formula:

$$\text{JB} = \frac{n}{6}\left(S^2 + \frac{1}{4}K^2\right) \quad (5.1.1)$$

Where, n is represented as the number of observations, S is the skewness and K stands for the kurtosis of the sample's abnormal return.

A characterization of the skewness and the kurtosis is to expect values as result to be zero and three respectively. Any result deviating from these values will increase the test statistic.

Furthermore, since we have a large sample size the test statistic is compared with the chi-squared distribution with two degrees of freedom[4]. If there is evidence of excess from the test statistic in relation to the critical value of the chi-squared, then the null hypothesis for the normality is rejected. The chi-squared is the commonly used test, once it can be used

[4] Chi-squared critical values with two degrees of freedom: 1%=4.61; 5%=5.99 and 10%=9.21

for any kind of distribution, so we can assume from their popularity is support among scholars.

In the table 3 from panel A-D we show the evidence of results for full sample from every proxy event observation selected previously to conduct the Jarque-Bera test.

Table 3 - Jarque-Bera Test for Normality

Panel A - BM

Window	N	Min	Max	Mean	Std Dev.	Skewness	Kurtosis	Jarque Bera	Prob
-1__1	3422	-0.56	0.43	0.01	0.07	-1.02	8.34	10505.09	0.00
2__22	3422	-0.88	0.68	0.00	0.10	-0.05	7.36	7721.89	0.00
2__63	3422	-1.34	1.12	-0.02	0.19	0.03	4.94	3478.95	0.00
2__126	3422	-1.73	1.52	-0.03	0.31	-0.09	4.19	2506.56	0.00
2__189	3422	-2.52	2.64	-0.05	0.43	-0.15	4.69	3154.26	0.00
2__252	3422	-3.36	3.13	-0.05	0.56	-0.09	4.43	2805.70	0.00

Panel B - EP

Window	N	Min	Max	Mean	Std Dev.	Skewness	Kurtosis	Jarque Bera	Prob
-1__1	4139	-0.86	0.54	0.01	0.08	-1.38	13.33	31957.52	0.00
2__22	4139	-0.88	0.96	0.00	0.11	0.18	8.23	11712.00	0.00
2__63	4139	-1.98	1.86	-0.03	0.22	-0.04	7.77	10400.53	0.00
2__126	4139	-3.01	2.47	-0.03	0.35	-0.11	6.91	8244.27	0.00
2__189	4139	-4.33	3.48	-0.06	0.49	-0.30	7.41	9539.08	0.00
2__252	4139	-5.86	4.55	-0.07	0.63	-0.22	6.96	8390.80	0.00

Panel C - CP

Window	N	Min	Max	Mean	Std Dev.	Skewness	Kurtosis	Jarque Bera	Prob
-1__1	3286	-0.69	0.43	0.01	0.07	-1.03	9.49	12910.38	0.00
2__22	3286	-0.59	0.83	0.00	0.10	0.28	6.65	6091.98	0.00
2__63	3286	-1.34	1.15	-0.02	0.20	-0.06	5.60	4295.16	0.00
2__126	3286	-2.24	1.52	-0.03	0.31	-0.17	4.69	3028.24	0.00
2__189	3286	-3.89	2.65	-0.05	0.44	-0.34	6.64	6092.27	0.00
2__252	3286	-3.36	3.13	-0.05	0.56	-0.15	4.73	3081.90	0.00

Panel D - SG

Window	N	Min	Max	Mean	Std Dev.	Skewness	Kurtosis	Jarque Bera	Prob
-1__1	3994	-0.86	0.54	0.01	0.07	-1.32	13.23	30270.90	0.00
2__22	3994	-0.88	0.96	0.00	0.10	0.17	8.41	11779.56	0.00
2__63	3994	-1.98	1.86	-0.02	0.21	0.11	8.49	12014.27	0.00
2__126	3994	-2.45	2.47	-0.03	0.34	0.11	6.56	7174.59	0.00
2__189	3994	-3.89	3.48	-0.05	0.47	-0.03	6.98	8102.08	0.00
2__252	3994	-3.36	4.55	-0.06	0.60	0.10	5.96	5919.53	0.00

Note: The table 3 in all panels represents the Jarque-Bera Test for Normality of using the full number of quarter events over the 2010Q1 until 2015Q3 for the event window (-1;1), as well for the post-event window (2;22), (2;63), (2;126), (2;189) and (2;252). Each panel stands for each proxy used for the final sample selection. BM (book-to-market); EP (earnings-to-price); CP (cash-flow-to-price) and SG (annual average growth in sales over the previous five years).

From all panels in the table above is evident that in every sample period from the event-window and the post-event windows, the test statistics exceed the critical value. From this evidence, we reject the null hypothesis and we conclude saying that the sample is not normally distributed showing evidence of anomalies in the stock market.

Moreover, from every panels the skewness and kurtosis achieved deviating numbers from what was supposed. Even if the skewness represents results closer to zero in some windows, the same does not happen to kurtosis from the deviation of three. Whereas, the stronger value is located in the event window with 8.34, 13.33, 9.49 and 13.23 and as for the smaller values are situated in the fourth windows with the exception for panel D where is detected in the final windows representing 4.19, 6.91, 4.69 and 5.96 for BM, EP, CP and SG respectively. Moreover, the skewness seems to be negatively larger in the event window comparing with following post-event windows and an agreement seems to have with turning skewness positive to the left in the second windows for all panels.

Having thick tails, there is some windows that approximate to the expected skewness and kurtosis values for a normal distribution.

Despite the rejection of the null hypothesis, the non-parametric test should be used anyways to reinforce the robust results.

5.2 Sample Observations

In this subsection, it is illustrated in the figures 5a and 5b in full window (-1;252) for each proxy, the initial reaction of event window and post-event window of portfolios P1-P5 and P6-P10 when earnings announcement abnormal returns and earnings surprise are positive and negative, and the following figure show us the same thing, but only for the earnings announcement abnormal return portfolio observations. In additionally, a hedge portfolio will be added for each group of portfolios. This section is important in order to have a clearly idea to see the market reaction of the market incorporating information, as well to see the reaction of investors through drifts in post-event window.

Figure 5a - PEAD using proxies: EAAR/ES Portfolios - Value, Glamour and Hedge Portfolios

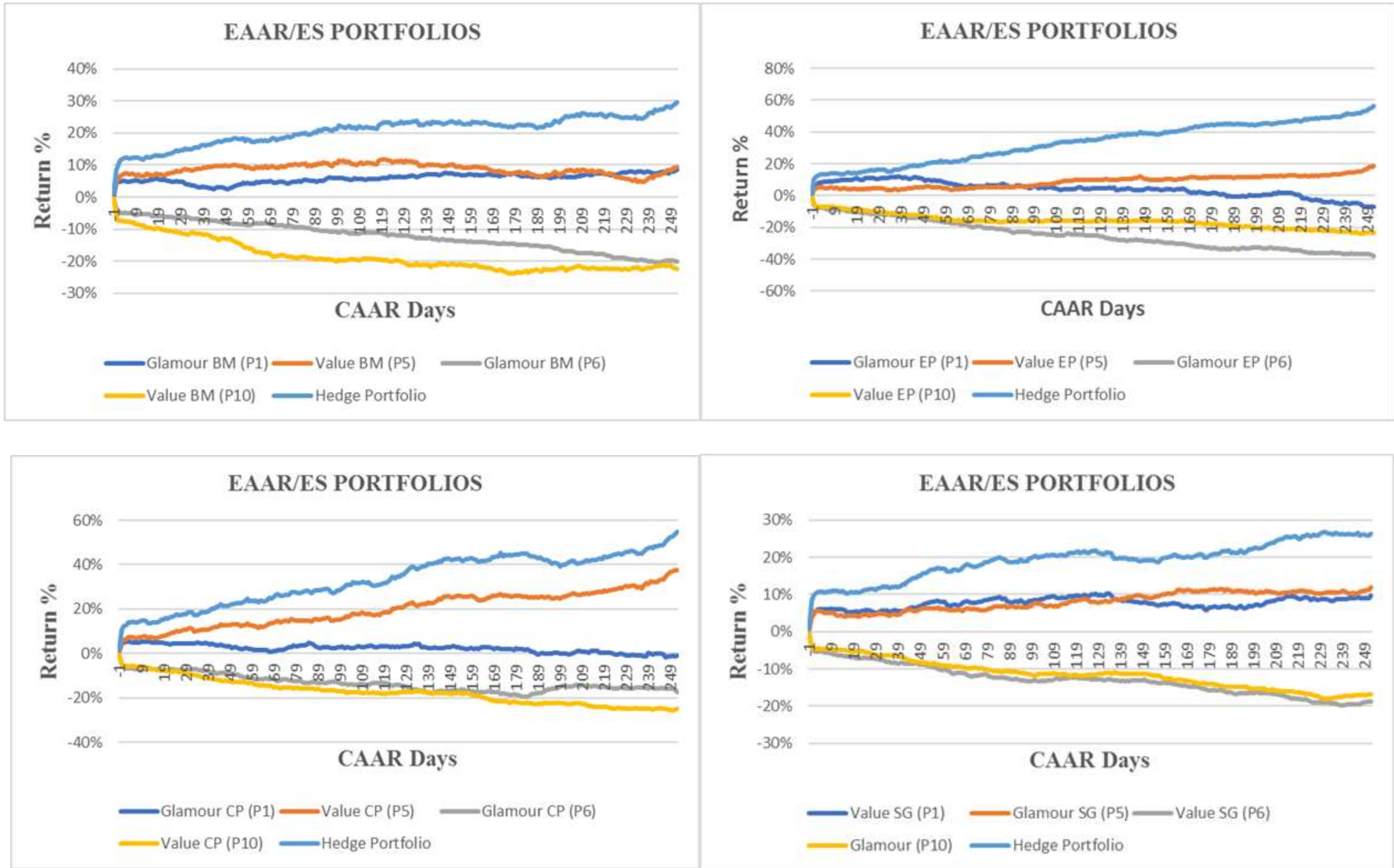
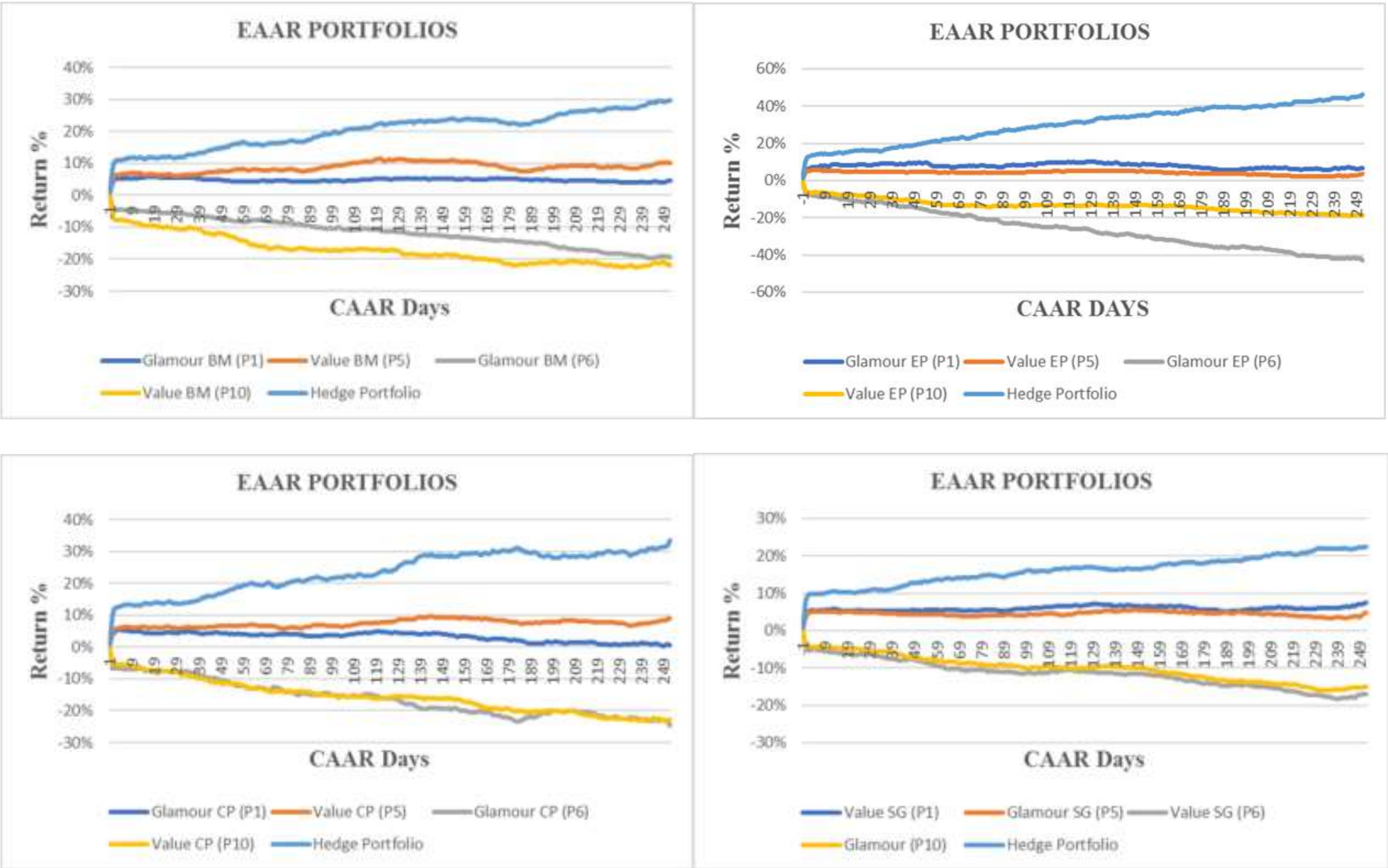


Figure 5b - PEAD using proxies: EAAR Portfolios - Value, Glamour and Hedge Portfolios



From the figures illustrated in 5a and 5b displayed over the 252-day event window, which correspond to a one year trading days, is evident that in the first trading days there is still a process of absorbing the initial information release of the earnings announcements delivered by the companies, adjusting in the event window, where the drifts are more clearly in the post-event window. So, it rejects the idea that the market reflects all information available purpose by the weak and semi-strong form of EMH.

The portfolios P1-P5 and P6-P10 seem to be very close with one and another across the time except the CP P1-P10 and EP P6-P10 EAAR/ES and EAAR portfolios achieving extreme returns -10% and nearly 30% respectively and as concern of the latter group of portfolios in getting negative returns of -10% and -40%.

The glamour and value positive portfolios seem to gain more drift in the CP EAAR/ES figure for P5 starting to drift up in day 30 and gain more evidence in day 130, and P1 for SG EAAR/ES drifting up in the day 40. As respect of negative glamour value portfolios, this is more evident for the BM for both EAAR/ES and EAAR portfolios drifting down around the day 30.

Moreover, for both figures there is a positive effect for P1-P5 and a negative effect for the P6-P10 generating a very profitable hedge portfolio around 20%-40%.

The following sections will describe the portfolio results for every subsample signs and the robustness of this study.

5.3 Results using Both Anomalies

In this part, we will see the results for the aim of this investigated study that compose for linking the value anomalies directly with the post-earnings and announcement drift. The portfolios were formed into quintiles based on the proxy classification of each of them. In total, for each observation of PEAD and the corresponding linking value anomaly, 30 portfolios were made for the six-subsamples based on the signs of EAAR (+/-) and ES (+/-/0), allocating each stock into one of these six subsamples.

Additionally, as justified in the previous sections we also analysed the signs of EAAR isolated when the sign is negative and when the sign is positive. The formation of portfolios was also sorted into quintiles based on the classification of each value anomaly.

Moreover, the construction of the portfolio starts with the 3-day event window and the drifts extend over the 1-month, 3-months, 6-months, 9-months and 1-year post-window. The number of observations and the market value, as well the value of the anomaly ratio is also added for each portfolio.

5.3.1 Post-Earnings Announcement Drift using BM

The table 4a reports the investigation results of post-earnings announcement drift and the BM classification. The portfolios were sorted into quintiles, where the value stocks refer to stocks with highest classification and glamour stocks are denoted for having lowest classification based on the BM.

In table 4b is illustrated the portfolios of EAAR signs, sorted into quintiles based on the BM classification.

Table 4a - Results: EAAR/ES portfolios using BM as a proxy

BM_rank	obs	MV (M £)	BM	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
Panel A: Earnings Surprise>0 & EAARs>0									
Glamour 1	54	7130	0.17	4.72***	0.52	-0.02	1.61	1.44	3.75
2	45	7434	0.40	4.37***	1.57	3.38	5.08*	4.02	8.21
3	48	9143	0.68	5.54***	-0.62	0.08	4.86	7.06	14.03**
4	68	3865	0.97	4.09***	-0.08	1.15	3.71	3.50	6.02
Value 5	54	6115	3.16	**5.66*** **	**1.28**	**3.66**	**5.35**	**0.90**	**3.74**
Panel B: Earnings Surprise<0 & EAARs<0									
Glamour 1	175	6156	0.14	**-4.43*** **	**-1.71** **	**-3.8* **	**-7.51*** **	**-10.68** **	**-15.75** **
2	242	4625	0.33	-4.47***	0.19	-3.23***	-7.61***	-10.71***	-14.57***
3	215	2936	0.53	-5.59***	-0.35	-4.32***	-6.15**	-9.79***	-10.91***
4	244	6781	0.85	-3.96***	-1.27**	-5.47***	-7.39***	-11.52***	-14.49***
Value 5	104	3552	2.58	-7.31***	-2.98***	-9.88**	-12.46**	-15.38***	-15.04***
Spread				**10.09**	**2.99**	**7.46**	**12.86**	**11.58**	**19.49**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and full results can be consulted in Appendix C in table 7.

Table 4b - Results: EAAR portfolios using BM as a proxy

BM_rank	obs	MV (M £)	BM	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
				Panel A: EAARs>0					
Glamour 1	462	5485	0.15	4.82***	0.75**	-0.46	0.15	-0.17*	-0.35
2	472	4005	0.34	4.45***	0.13	-0.85*	-0.68	-1.94**	-1.48
3	395	3158	0.56	4.6***	-0.18	-1.88*	-2.19*	-2.85***	-2.9***
4	426	5720	0.91	4.45***	-0.22**	0.73	1.52	2.29	4.42
Value 5	285	2802	2.40	**6.15***	**0.26**	**1.74**	**4.84**	**1.49**	**3.98**
				Panel B: EAARs<0					
Glamour 1	283	5933	0.14	**-4.28***	**-1.2**	**-3.71***	**-7.1***	**-10.47***	**-15.18***
2	301	4311	0.34	-4.5***	-0.18	-3.74***	-7.58***	-10.27***	-13.61***
3	250	3135	0.54	-5.3***	-0.05	-2.83**	-4.41***	-7.35***	-8.94**
4	296	6196	0.88	-3.88***	-1.01***	-5.57***	-7.03***	-11.52***	-13.98***
Value 5	252	3222	2.80	-7.56***	-2.36***	-8.06***	-9.5**	-13.76***	-14.4***
Spread				**10.43**	**1.46**	**5.45**	**11.94**	**11.96**	**19.16**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection.

The first notice that appeals in both tables is when EAAR and ES agrees on negative sign and when EAAR has negative sign, both have strong evidence to indicate a large amount of results with significance level with less support of the parametric tests in relation to the non-parametric tests. Most of the significance levels are performing at 1%, with only a few exceptions in the 6-month window and for P6 in 3-month, 9-month and 1-year window also seen in the figures 5a-5b. Only the 1-month window failed almost exclusive for evidence of the non-parametric test at significance level with exception for the last portfolio.

Our drift results support the findings of Yan and Zhao (2011) achieving positive drifts when earnings surprise and earnings announcement abnormal return are positive (Panel A), and when have negative earnings surprise (Panel B and Panel C). Given the idea that the stock price moves in the same direction of earnings surprise, increasing the drift across every post window. On the other hand, the when the earnings surprise are positive and negative earnings announcement abnormal return (Panel D), contradicts the findings from the author. Assuming, that stock prices and earnings surprise move in different directions.

Another contradiction with Yan and Zhao (2011) is the 3-day event window in having more volatile glamour stocks than value stocks, which do not match with our result except when ES are consensus and EAAR are positive (Panel E). However, from both tables these findings that value stocks outperform glamour stocks are more in agreement with the evidence from LLSV (1997).

Moreover, the value stocks seem to be more in “favourable” than the glamour stocks. Value stocks characterized by trading at a lower price relative to its fundamentals are more attractive for the analysts, believing that this kind of stocks are undervalued and have profitable opportunities thinking that the price will rise. Therefore, the market reaction of EAAR to ES is wider than glamour stocks, making investors to get overconfident turning them overreacting due private information (Daniel et al. 1998).

This is also confirming for the drifts in almost post-windows for every panel, supporting the evidence by Yan and Zhao (2011).

When ES and EAAR are positive and EAAR are positive, the glamour portfolio shows differences in the 1-year window exhibited 3.75% and -0.35% drift respectively. Contrary, the drift values in the same period for the value portfolio when both ES and EAAR are negative as well the EAAR portfolio negative sign show similar results 3.74% and 3.98% respectively. Following the same pattern for close results when both ES and EAAR are negative and when EAAR is negative it shows around 14%-15% drift. As concerning the spread also show similar close results for ES and EAAR and EAAR with 19.49% and 19.16% in 1-year post window before transaction costs. Since, we employ quarterly earnings announcement data the annualized mean abnormal return is larger for EAAR and ES portfolios with 29.84% than the EAAR portfolios with 21.8% before transaction costs. So, the return is larger when earnings announcement abnormal return and earnings surprise follow their signs.

Overall, is visible a long side phenomenon specially in value stocks where it appears to be stronger and therefore is a possible explanation for investors underreact to earnings announcement and a connection between earnings and price momentum.

In the following subsection, we investigated PEAD using other proxies to see if the conclusions results remain.

5.3.2 Post-Earnings Announcement Drift using other proxies

From tables 8a-10a and 8b-10b report the earnings announcement abnormal return with earnings surprise portfolios and the earnings announcement abnormal return portfolios respectively, where it is possible to see the post-earnings announcement drift using different proxies for value and glamour stocks based on EP, CP and SG proxies. The portfolios were sorted into quintiles based on the proxies' classification. For the first two proxies, the value stocks refer stocks with the highest ranking and lowest ranking for the glamour stocks. As concerns the sales growth, the value stocks refer to stocks with the lowest sales growth, while the glamour stocks refer to highest stocks. In additionally, as it happens previously for BM besides the six sub-samples regarding the sings of the ES and EAAR, we also show tables with two more subsamples by isolating the sign of EAAR (see appendix C).

The first notice is the same as made before when using the BM as a proxy. When EAAR and ES agrees on negative signs, as well when EAAR is negative it generates larger amount of drift results supporting the rejection using the non-parametric tests. Once again, most of the results were performed at 1% significant level, with just a few exceptions in the post-event windows specially in the 6-month window. The exception maintains in the 1-month window in failing evidence with significance level for the non-parametric tests, scaping only the last portfolios for EP and CP and the first for SG.

Then, the glamour stocks in CP and SG when earnings surprise and EAARs portfolios are positive in the 3-day announcement window (Panel A) are smaller than the value stocks. This is consistent with the finding when using BM as a proxy, only EP agrees with the findings of Yan and Zhao (2011). When earnings surprise and EAAR portfolios are negative the EP and CP agrees with the findings of the author saying that the value stocks are more positive than the glamour stocks, but the SG agrees with our findings made with for the BM proxy.

In general, for every panel (Panel A-F) in each proxy the value stocks seem to outperform the glamour stocks. Given the idea again that there is a preference of analysts in these stocks, believing that the price of the stock is trading at a below price from what is worth.

In the post-event window, the value stocks exhibit larger drifts at 1-year window with 13.99% and 31.25% when both ES and EAAR are positive for EP and CP respectively and 7.42% for glamour stocks in SG proxy putting a contradiction with the result of the value stocks for being smaller than the latter. This is also evident for Yan and Zhao (2011) evoking LLSV (1997) for the reason to use CP and GS two-way classification.

The EAAR portfolios when are positive and when are negative confirms, taking only a few exceptions, that for the post-event window the value stocks have in general a better performance than the glamour stocks, making consensus with the findings when we used BM as a proxy.

Finally, the abnormal return for EAAR and ES portfolio for each proxy was 44.38%, 42.38% and 16.67% before transaction costs in the 1-year windows for EP, CP and SG respectively and for EAAR portfolio was 33.89%, 21.33% and 13.24% before transaction costs for the same period. As we considered quarterly earnings announcement data the annualized average abnormal return is 36.6%, 45.52% and 25.72% for EAAR and ES portfolios and 37.28%, 31.76% and 18.8% for EAAR portfolio for EP, CP and SG respectively. Thus, the same conclusion remains when we use portfolios based on BM classification in which the EAAR and ES portfolios generate larger spread returns than the EAAR portfolios.

The section 5.4 will present an explanation of this results by a regression analysis.

5.4 Regression Analysis

The regression analysis will be useful to quantity the relationship of our post-event event days with other variables and to know how close and well the relationship is. Fama and Macbeth (1973) conducted a regression analysis for a PEAD saying that this anomaly is based on testing and analysis. Their regression analysis resulted that the coefficients and residual of risk return are coefficients with the "efficient capital market". Our regression analysis will investigate the explanatory factors of PEAD such as: information uncertainty purposed by Zhang (2006) and others from prior literature.

In this way, the regression analysis will be based in two signs of earnings announcements portfolios when are positive and when are negative. The reason why did not employ the regression analysis based on the earnings announcement and earnings surprise when both are positive and negative besides, the already reason said previously in the beginning of this chapter is because we want to explore the influence of the earnings surprise sign on the earnings announcement drifts. So, the ES will be part as dummy variable, the EAAR event window and each proxy based on their classification portfolio, as well the other independent variables will serve to examine the outcomes.

To complete the extraction of variables, following the latter author three more independent variables will be included: Age, Number of Analysts and the Market Cap. The firm age is measured by the age of firm´s incorporation until the announcement date and the number of analysts covering a stock is important because they represent a key financial variable. Furthermore, the last variable to be included is the Beta, that determines the volatility of the portfolio comparing with the market to explain the drift as tested by Bernard and Thomas (1989).

The regression analysis is presented in the following table 5 for BM and other tables 11-13 for EP, CP, and SG respectively (see Appendix D), as well for full results of all proxies is also available in the same appendix.

Table 5 - Regression Analysis for PEAD using BM

Dependent Variable	EAAR	Age	Coverage	Beta	ES	Market Cap	BM	Constant	R^2
Panel A:EAAR>0									**N = 2040**
CAAR(2:22)	-0.2 (-3.74***)		0 (-2.62***)	0.01 (2.07**)					0.0145
CAAR(2:63)	-0.44 (-6.41***)			0.02 (2.95***)				-0.01 (-1.95*)	0.0263
CAAR(2:126)	-0.93 (-19.13***)		-0.001 (-6.41***)			0 (3.25***)	-0.02 (-2.93***)	0.08 (16.97***)	0.175
CAAR(2:189)	-0.85 (-6.19***)			-0.03 (-2.18**)	0.03 (1.80*)			0.07 (5.44***)	0.0257
CAAR(2:252)	-1.03 (-4.85***)			-0.05 (-2.37**)	0.04 (1.88*)			0.1 (4.73***)	0.0184
Panel B:EAAR<0									**N = 1382**
CAAR(2:22)	-0.13 (-2.12**)								0.0052
CAAR(2:63)	-0.57 (-7.34***)							-0.01 (-1.83*)	0.0393
CAAR(2:126)	-1.05 (-16.04***)	0.0003 (2.16**)	0.0012 (2.80***)		0.013 (1.78*)			-0.07 (-12.55***)	0.1708
CAAR(2:189)	-1.27 (-7.84***)	0.0007 (1.93*)	0.003 (3.57***)		0.03 (1.87*)			-0.16 (-11.2***)	0.0641
CAAR(2:252)	-1.19 (-5***)	0.0008 (1.69*)	0.0056 (3.70***)		0.05 (1.91*)			-0.2 (-9.66***)	0.0394

Note: In this table is possible to analyse the regression for the post-earnings announcement drift using book-to-market as a proxy. For panel A we have positive earnings announcement abnormal returns sample with 2040 events and for the panel B we have same but when is negative with 1382 events. The dependent variables are the cumulative average abnormal return for the post-event windows (2;22), (2;63), (2;126), (2;189) and (2;252). The independent variables are the earnings announcement abnormal return (EAAR) for the event window (-1;1). Age: Difference between the date of incorporation and the event date. Coverage: Number of analysts covering a stock. Beta: estimated beta for stock i, calculated by the market model. ES: earnings surprise. Market Cap: market value of equity in million pounds for the stock I at the event date. BM: book-to-market ratio for the stock i at the event date. Constant: interception value in the y-axis. R^2: coefficient of determination. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1%. The regression equation is determined by the following formula:

$CAAR$i,t=α+β1$*$#CAR_{-1}_1i(EAAR)+β2$*Agei,t$+β3$*Coveragei,t$+β4$*Betai$+β5$*ESi,t$+β6$*Market$ $Capi,t$+β7$*B$Mi,t + Ɛ. For more details about the formula please see Appendix D.

From other tables (see appendix D) we can see about half of the table has significant variables, whereas the event window is the only independent variable represented as significantly in all post-event windows in both panels. Curiously, all EAAR has shown negative results this could lead with the explanation of the information asymmetric theory. Thus, according to Francis et al., (2007) the greater PEAD profitability is associated with the greater information uncertainty, this is seen specially in panel B where the drifts follows the same sign, and the number of analysts follow the opposite sign.

The R^2 values are considered as low values in all panels for the four regressions analysis, which may be the conclusion of the information uncertainty. However, the highest R^2 is obtained in the 6-month window for all panels and regressions with a range that around about between 15.5% and 21% in all four regressions analysis, that is the same to say, this window is the most suitable for the model. Regarding the constant it represents significant and different values in all post-event windows, with the exception for the one-month window whereas it does not occur. And when the constant occurs for both panels it follows the signs of each panel, by having for most of the cases positive coefficient for panel A and negative coefficient for panel B in all four regression analysis.

In what concerns to the proxies' BM, EP, CP and SG in general they present contradiction sign values with the respective sign of the panel in all post-windows. For BM ratio independent variable, there is particularly no significant correlation, but for the remain proxies they increase as the post-window increases, showing more significant correlation. In fact, this confirms with the results from the previously sections.

The number of analysts and the age of firms is confirmed more in panel B for the BM, EP, CP and SG regression analysis verifying more in the last windows where the age firm and the number of analysts increases from window to window as simultaneously the EAAR verifies larger negative drifts in this panel and windows. For Beta, in an overall analysis it seems that is following their panel signs with only a few exceptions in BM and

EP regressions. This beta results looks like they are corresponding to the swings of the market sign, but not by the corresponding high r-squared. In fact, when we have beta and earnings surprise in the same post-window they do not match with the same sign, either for panel A or B, this is when one beta is negative the other is positive and vice versa. This is supported with the findings of Ball (1992) in the response of betas to earnings.

The earnings surprise produces significantly when earnings announcement abnormal return is positive (Panel A). So, the earnings surprise has positive influence on drifts. This is agreed with the findings of Johnson and Zhao (2011) and Yan and Zhao (2011). But, in some cases (BM, EP) when earnings announcement abnormal return is negative (Panel B) the earnings produce positive influence on drifts, therefore investors overreact the information incorporated in earnings surprise.

Finally, the market capitalization, as well the BM, across all panels from all tables has practically no appearance in all dependent variables and when has is only in the 6-month window and the value is almost null. Moreover, this lack of correlation between market cap, BM and PEAD is also visible in Foster et al. (1984) study. The following section will serve to conduct robustness tests in order to support or not the results tested until now.

To sum up, in all four regression analysis for both panels it seems to have negative or positive relationship with the exception of the market capitalization in which had no relationship. Moreover, the six-month window is the most suitable window indicated a relationship of 17%-17.5%, 16%-16.7%, 19.7%-21%, 15.5%-16% in each panel for BM, EP, CP and SG respectively.

5.5 Robustness Checks

The robustness tests will be based on the size effects of the London Stock Exchange companies. Similar, to previous subsections a quintile portfolio was formed based on each proxy classification, but to control size effect we separate the portfolios into small and big firms.

We chose firm size effect as our robustness test because we want to see if there are any differences regarding the firm size companies on how fast investors respond to new information, and if there is any information asymmetry surrounding earnings release.

As a large stock market, the London Stock Exchange has wide listings companies but also a wide market value that ranges from £1.12M to £165,829.01M. In this way, we are able from the market value of each company to determine the composition group portfolio of the companies in each will be inserted, if they are small or big firms. The size break-points used for study is determined based each stock market value with the relative minimum and maximum threshold for each category, as it is defined by (LSE, 2010):

- Small Cap < £297M
- Medium Cap < £2.3B > £297M
- Large Cap > £2.3B

The small firms will incorporate stocks with the Small and Medium Cap, while the big firms will denote stocks that incorporate the Large Cap category.

From tables 6a-6b (see below), 14a-16a and 14b-16b (see Appendix E) show each robustness tests portfolios for EAAR with ES signs and EAAR sign based on size portfolio ranking using each proxy.

Table 6a - Robustness Check: EAAR/ES portfolios using BM as a proxy – Size Effect

Size_rank	BM_rank	obs	MV (M £)	BM	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: Earnings Surprise>0 & EAARs>0					
Small	Glamour 1	23	890	0.21	5.29***	0.06	-0.16	0.91	3.83	6.4
Small	Value 5	45	379	3.98	6.27***	1.9	5.94	10.84	7.26	11.7
Spread					**0.98**	**1.84**	**6.1**	**9.93**	**3.43**	**5.3**
Big	Glamour 1	23	18282	0.13	3.93***	1.01	-0.38	4.18	2.35	0.69
Big	Value 5	22	20028	1.55	3.11***	-0.29	-1.74	-5.25*	-7.3**	-6.19
Spread					**-0.82**	**-1.3**	**-1.36**	**-9.43**	**-9.65**	**-6.88**
					Panel B: Earnings Surprise<0 & EAARs<0					
Small	Glamour 1	96	732	0.15	-4.92***	-3.3**	-5.64*	-8.52**	-13.39***	-18.61***
Small	Value 5	195	243	3.03	-7.22***	-2.67**	-11.83***	-13.44**	-17.33***	-18.76***
Spread					**-2.3**	**0.63**	**-6.19**	**-4.92**	**-3.94**	**-0.15**
Big	Glamour 1	70	17585	0.12	-3.14***	-0.14	-1.71	-6.16**	-8.44***	-10.79*
Big	Value 5	127	23579	1.36	-3.85***	-1.9*	-3.99***	-5.97*	-9.81***	-10.93***
Spread					**-0.71**	**-1.76**	**-2.28**	**0.19**	**-1.37**	**-0.14**
Spread	**Small**				**11.19**	**5.2**	**11.58**	**19.36**	**20.65**	**30.31**
Spread	**Big**				**6.25**	**-0.15**	**-0.03**	**0.91**	**1.14**	**4.6**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the Size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every size/ proxy portfolio can be consulted in Appendix E

Table 6b - Robustness Check: EAAR portfolios using BM as a proxy – Size Effect

Size_rank	BM_rank	obs	MV (M £)	BM	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: EAARs>0					
Small	Glamour 1	125	672	0.17	5.57***	0.76	-1.92	-1.75	-3.14	-4.1
Small	Value 5	411	235	2.70	5.95***	0.47	2.29	5.82**	4.12*	8.07***
Spread					**0.38**	**-0.29**	**4.21**	**7.57**	**7.26**	**12.17**
Big	Glamour 1	151	12953	0.27	4.12***	-0.09	-0.97	-0.69	-1.56*	-1.81
Big	Value 5	186	16474	0.80	3.48***	-0.11	0.75	0.61	1.22	1.76
Spread					**-0.64**	**-0.02**	**1.72**	**1.3**	**2.78**	**3.57**
					Panel B: EAARs<0					
Small	Glamour 1	105	712	0.15	-4.77***	-2.77**	-5.85**	-9.42***	-15.74*	-21.46***
Small	Value 5	249	231	3.28	-7.47***	-1.5	-9.3***	-9.95***	-15.36***	-17.63***
Spread					**-2.7**	**1.27**	**-3.45**	**-0.53**	**0.38**	**3.83**
Big	Glamour 1	90	16982	0.11	-3.14***	0.4	-1.25	-4.58***	-6.22***	-8.7*
Big	Value 5	162	22855	1.34	-3.7***	-1.85***	-3.76***	-5.72**	-9.47***	-10.83***
Spread					**-0.56**	**-2.25**	**-2.51**	**-1.14**	**-3.25**	**-2.13**
Spread	**Small**				**10.72**	**3.24**	**8.14**	**15.24**	**19.86**	**29.53**
Spread	**Big**				**6.62**	**-0.51**	**2**	**5.19**	**7.44**	**10.46**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1: Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every EAAR portfolio for each proxy can be consulted in Appendix E.

Similarly, with the empirical results for every robustness checks when EAAR and ES agree on negative sign and when EAAR has negative sign in the size/proxy portfolios they show more significantly evidence, particularly in the non-parametric tests.

Analyzing the 3-day event window it seems that from size/proxies' results met our first results on having more volatile value stocks than glamour stocks, having a bigger difference between values when we compare each stock (glamour vs value) in each panel and by panel (Panel A vs Panel B), looking the value stocks results by sign at the event window and the same thing when we look to the glamour stocks, the difference between value comparing glamour is notable. Indeed, this is inconsistent with Yan and Zhao (2011), the only truth is verified for the size/EP portfolios.

In the post-event windows, when EAAR/ES is positive and when is negative (Panel A and Panel B) the small firm size portfolios show to have more significant drifts for BM, EP, CP and SG than the big firm size portfolios. Yet, all big glamour and value stocks show to be significant in 1-year window when EAAR/ES are negative demonstrating drifts with -10.79%, -13.22%, -5.55%, and -5.03% for glamour stocks and drifts for the same period with -10.93%, -8.31%, -10.59% and -3.08% for value stocks respectively for each proxy. The same situation occurs when we look for the EAAR portfolios. When negative sign imposes the big glamour stocks produces a drift of -8.7%, -9.94%, -5.42% and -5.28% in the same time period as before and for value stocks -10.83%, -6.54%, -7.31% and -3.74% respectively for each proxy.

Another finding is that in general regardless the sign for EAAR/ES and for EAAR the value stocks generates higher PEAD than glamour stocks, they either show to be more positive or less negative, even so this comparison can be seen with more evidence when the sign is positive. This is consistent with our empirical results and with the findings of Yan and Zhao (2011).

Finally, in a combination spread the small portfolios obtain with a big difference a higher spread than the big portfolios. This is seen for EAAR/ES portfolios with 30.31%, 58.97%, 44.88% and 21.09% for BM, EP, CP and SG size portfolio at 1-year windows, which translated in quarterly to annually is 46.32%, 45.12%, 55.8% and 23.04% respectively. The same spread difference from small portfolios to big portfolios is seen in EAAR portfolios with 29.53%, 48.42%, 34.37% and 20.7% for BM, EP, CP and SG size portfolio at 1-year windows, which translated from quarterly to annually is 32.56%, 54.76%, 46% and 28.72%.

From this robustness check it was possible to see evidence value stocks outperform growth stocks, confirming our previously results and we also could see that there is evidence of small firm effect in the London Stock Exchange, whereas this firms with characteristics from having a small capitalization produce greater growth opportunities comparing with larger firms. In additionally, the small cap companies are riskier than companies with larger capitalization, so they have higher returns as consequently are known to tend more volatile business environment.

These findings are also consistent with the findings of Foster et al. (1984) where it says the smaller the firm size, the larger is the PEAD.

6. Conclusion

In this study, we investigated the relationship between two anomalies, the post-earnings announcement drift and the value anomaly, in the UK stock exchange using the book-to-market, earnings-to-price, cash-flow-to-price and sales growth as proxies for the value anomaly. Hereupon, it was constructed EAAR/ES and EAAR portfolios regarding their signs for glamour and value stocks based on the proxies' classification and profitable opportunities with the conditionals signs was designed to challenge the EMH.

We found that by rejecting the null hypothesis and proceeding a regression analysis there is a presence of anomalies and a relationship between the two anomalies, adding also significant and different constant values in every post-event window except for the first post-event window in every proxy. Moreover, we also found some evidences that challenge the Efficient Market Hypothesis. According, to the study of Liu, et al., (2003) we could also agree that the UK has an inefficient stock market. It is shown that there are significant drifts and the existence of anomalies on both signs, either positive or negative. Overall, the observed portfolios tend to respond from their initial reaction, drifting in the same direction and providing annual average abnormal return of 29.84%, 36.6%, 45.52% and 25.72% before transaction costs for EAAR/ES portfolios and 21.8%, 37.28%, 31.76% and 18.8% before transaction costs for EAAR portfolios, all with respectively for BM, EP, CP and SG proxies.

Our results show that based on the proxy classification the EAAR/ES portfolios have larger annual abnormal return, providing a larger profitable opportunity, when we compared with the EAAR portfolios. Furthermore, our results found to be more volatile in the 3-day event window for value stocks than for glamour stocks contradicting the findings of Yan and Zhao (2011), but in agreement with Lakonishok et al. (1994) evidence. So, the value stocks have more profitable opportunities than the glamour stocks with the same level of risk. This view is also verified in the post-windows, and now is also supported with the former author.

Throughout our regression analysis, we could see a positive influence on earnings surprise when earnings announcement abnormal return is positive and in some case cases when earnings announcement abnormal return is negative. Moreover, from observations particularly with negative EAAR is shown a contradiction of signs between the number of analysts covering a stock and the drift from the post-event windows, concluding that there is information uncertainty. And we could concluded that the six-month window has the most suitable window for all panels and regression analysis.

As for robustness check we investigate the size effect and divided the portfolios into two groups, measured by small and big capitalization. Here, it was also consistent with our previous results that value stocks outperform growth stocks and we also checked that the small firms outperform the big firms, creating a small firm effect which is consistent with the findings of Foster et al. (1984).

This study has significant contributions to the literature, because to best of our knowledge there is a lack of investigation in this field in a stock market outside of the US stock market, and we fill this gap by studying for the UK stock market.

Our study has some limitations. Firstly, the event study methodology depends on assumptions of an efficient market. The length of time that an investor has to respond event signals is random, therefore this could have impact by exhibiting inefficiencies in the market because prices do not instantly or fully reflect all available information. Secondly, the period sample chosen may also have impact on the results. During the period from 2010Q1 until 2015Q3 occur several events, as mentioned before during this study, that may impact directly and/or indirectly the UK stock market. Thirdly, the use of a market index could lead to an underperforming by finding significant abnormal returns when it should not find instead of using a benchmark index. Finally, the transaction costs were not included. The value stocks produced higher returns than the glamour stocks with the same level of risk and it only give us suggestions about market opportunities, and not if a particular trading strategy could have been profitable over another.

For further research, we have some suggestions. Since this theme is recent there are several countries where this study could be applied. Furthermore, we suggest increasing the sample size since most countries, particularly in Europe, were affected by the recent financial crisis and in this way, we can avoid some noise trading. In additionally, the inclusion of a benchmark portfolio method could lead a stronger and reliable performance. Moreover, the event-day could be increase and a shorter post-event window could be applied as some authors suggest in order to generate more powerful results.

Bibliography

Armitage, S. (1995), “Event Study Methods and Evidence of their Performance.” Journal of Economic Surveys, 9(1):25-52

Ball, R. (1992), "The Earnings Price Anomaly." Journal of Accounting & Economics, 15(2-3): 319-345.

Ball, R. and P. Brown (1968), "Empirical Evaluation of Accounting Income Numbers." Journal of Accounting Research, 6(2): 159-178.

Ball, R., Kothari, S., and Watts, R. (1988), "The Economics of the Relation Between Earnings Changes and Stock Returns" *Working* paper, University of Rochester.

Barber, B. M. and J. D. Lyon (1997), "Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics." Journal of Financial Economics, 43(3): 341-372.

Barberis, N. and A. Shleifer (2003), "Style Investing." Journal of Financial Economics, 68(2): 161-199.

Barberis, N., Shleifer, A., and Vishny, R. (1998), "A Model of Investor Sentiment." Journal of Financial Economics, 49(3): 307-343.

Basu, S. (1983), "The Relationship Between Earnings Yield, Market Value, and Return for NYSE Common Stocks: Further Evidence. Journal of Financial Economics, 12: 129-156.

Basu, S. (1997), "The Conservatism Principle and the Asymmetric Timeliness of Earnings." Journal of Accounting & Economics, 24(1): 3-37.

Bernard, V. L. and J. K. Thomas (1989), "Post-Earnings-Announcement Drift - Delayed Price Response or Risk Premium." Journal of Accounting Research, 27: 1-36.

Bodie, Z., Kane, A. and Marcus, A.J. (1993), Investments, Irwin, New York, NY.

Boehmer, E., Musumeci, J., and Poulsen, A.B. (1991), "Event-Study Methodology Under Conditions of Event-Induced Variance." Journal of Financial Economics, 30(2): 253-272.

Bourguignon, F. and M. de Jong (2003), "Value versus Growth - Investor Styles and Stock Characteristics." Journal of Portfolio Management, 29(4): 71-79.

Brandt, M., Kishore, R., Santa-Clara, P., Venkatachalam, M. (2008), "Earnings Announcement are Full of Surprises." Working paper. Duke University.

Brown, S. J. and J. B. Warner (1980), "Measuring Security Price Performance." Journal of Financial Economics, 8(3): 205-258.

Brown, S. J. and J. B. Warner (1985), "Using Daily Stock Returns - The Case of Event Studies." Journal of Financial Economics, 14(1): 3-31.

Campbell, C. J. and C. E. Wasley (1993), "Measuring Security Price Performance Using Daily Nasdaq Returns." Journal of Financial Economics, 33(1): 73-92.

Campbell, J. Y., Lo, A. W. and Mackinlay, A. C. (1997), The Econometrics of Financial Markets. New jersey: Princenton University Prees.

Chan, L. K. C., Jegadeesh, N., and Lakonishok, J. (1996), "Momentum Strategies." Journal of Finance, 51(5): 1681-1713.

Chan, L. K. C. and J. Lakonishok (2004), "Value and Growth Investing: Review and Update." Financial Analysts Journal, 60(1): 71-86.

Chordia, T. and L. Shivakumar (2006), "Earnings and Price Momentum." Journal of Financial Economics, 80(3): 627-656.

Collins, D. W., Pincus, M., and Xie, H. (1999), "Equity Valuation and Negative Earnings: The Role of Book Value of Equity." Accounting Review, 74(1): 29-61.

Corrado, C. J. (1989), "A Nonparametric Test for Abnormal Security-Price Performance in Event Studies." Journal of Financial Economics, 23(2): 385-395.

Corrado, C. J., Truong, C. (2008), "Conducting Event Studies with Asia-Pacific Security Market Data." Pacific-Basin Finance Journal, 16, 493-521.

Cowan, A. R. (1992), "Nonparametric Event Study Tests." Review of Quantitative Finance and Accounting, 2(4): 343-358

Daniel, K., Hirshleifer, D., and Subrahmanyam, A. (1998), "Investor Psychology and Security Market Under- and Overreactions." Journal of Finance, 53(6): 1839-1885.

Debondt, W. F. M. and R. Thaler (1985), "Does the Stock-Market Overreact?" Journal of Finance 40(3): 793-805.

Desai, H. M., Rajgopal, S., and Venkatchalam, M. (2004), "Value-Glamour and Accruals Mispricing: One Anomaly or Two?" Accounting Review 79(2): 355-385.

Fama, E. F. (1991), "Efficient Capital - Markets .2." Journal of Finance 46(5): 1575-1617.

Fama, E. F. (1998), "Market Efficiency, Long-Term Returns, and Behavioral Finance." Journal of Financial Economics, 49(3): 283-306.

Fama, E. F. and K. R. French (1992), "The Cross-Section of Expected Stock Returns." Journal of Finance, 47(2): 427-465.

Fama, E. F. and K. R. French (1993), "Common Risk-Factors in the Returns on Stocks and Bonds." Journal of Financial Economics, 33(1): 3-56.

Fama, E. F. and K. R. French (1995), "Size and Book-to-Market Factors in Earnings and Returns " Journal of Finance, 50(1): 131-155.

Fama, E. F. and K. R. French (2007), "The Anatomy of Value and Growth Stock Returns." Financial Analysts Journal, 63(6): 44-54.

Fama, E. F. and J. D. Macbeth (1973), "Risk, Return, and Equilibrium - Empirical Tests." Journal of Political Economy, 81(3): 607-636.

Fama, E. F., Fisher, L., Jensen, M. C., and Roll, R. (1969), "The Adjustment of Stock Prices to New Information." International Economic Review, 10(2): 1-21.

Foster, G., Olsen, C., and Shevlin, T. (1984), "Earnings Releases, Anomalies, and the Behavior of Security Returns." Accounting Review, 59(4): 574-603.

Francis, J., Lafound, R., Olsson, P., and Schipper, K. (2007), "Information Uncertainty and Post-Earnings-Announcement-Drift." Journal of Business Finance & Accounting, 34(3-4): 403-433.

Fried, D. and D. Givoly (1982), "Financial Analysts of Earnings - A Better Surrogate for Market Expectations." Journal of Accounting & Economics, 4(2): 85-107.

Gigerenzer, G. (1996), "On Narrow Norms and Vague Heuristics: Reply." Psychological Review 103(3): 592-596.

Graham, B., and Dodd, D., (1934), Security Analysis. McGraw Hill, New York.

Hong, H. and J. C. Stein (1999), "A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets." Journal of Finance, 54(6): 2143-2184.

Huang, Y., Yang, J., and Zhang, Y. (2012), "Value Premium in the Chinese Stock Market: Free Lunch or Paid Lunch?" Applied Financial Economics, 315–324.

Jegadeesh, N. and J. Livnat (2006), "Post-Earnings-Announcement Drift: The Role of Revenue Surprises." Financial Analysts Journal, 62(2): 22-34.

Johnson, W. B. and R. Zhao (2011), "Contrarian Share Price Reactions to Earnings Surprises." Journal of Accounting, Auditing & Finance, 27(2): 236-266.

Jones, C. P. and R. H. Litzenberger (1970), "Quarterly Earnings Reports and Intermediate Stock Price Trends." Journal of Finance, 25(1): 143-148.

Kinney, W., Burstahler, D., and Martiny, R. (2002), "Earnings Surprise "Materiality" as Measured by Stock Returns." Journal of Accounting Research, 40(5): 1297-1329.

Kothari, S. P. and J. B. Warner (1997), "Measuring Long-Horizon Security Price Performance." Journal of Financial Economics, 43(3): 301-339.

Kothari, S. P., & Warner, J. B. (2008), Econometrics of event studies. In B. E. Eckbo (Ed.), Handbook of Corporate Finance: Empirical Corporate Finance. North Holland: Elsevier

Lakonishok, J., Shleifer, A., and Vishny R. W. (1994), "Contrarian Investment, Extrapolation, and Risk." Journal of Finance, 49(5): 1541-1578.

LaPorta, R., Lakonishok, J., Shleifer, A., and Vishny R. W. (1997), "Good News for Value Stocks: Further Evidence on Market Efficiency." Journal of Finance, 52(2): 859-874.

Lee, C. M. C. and B. Swaminathan (2000), "Price Momentum and Trading Volume." Journal of Finance, 55(5): 2017-2069.

Liu, W., Strong, N. and Xu., X., (2003), "Post-earnings announcement Drift in the UK". European Financial Management, 9(1), pp.89-116

Livnat, J. and R. R. Mendenhall (2006), "Comparing the Post-Earnings Announcement Drift for Surprises Calculated from Analyst and Time Series Forecasts." Journal of Accounting Research, 44(1): 177-205.

LSE (2010), "Market Capitalization Ranking at London Stock Exchange", http://www.stockchallenge.co.uk/ftse.php?report=101208, accessed on 25 July 2017,

LSE (2017), "London Stock Exchange official website", http://www.londonstockexchange.com/home/homepage.htm, accessed on 15 May 2017.

Lyon, J. D., Barber, B. M., and Tsai, C. L. (1999), "Improved Methods for Tests of Long-Run Abnormal Stock Returns." Journal of Finance, 54(1): 165-201.

MacKinlay, A. C. (1997), "Event Studies in Economics and Finance." Journal of Economic Literature, 35(1): 13-39.

Patell, J. M. (1976), "Corporate Forecasts of Earnings Per Share and Stock-Price Behavior - Empirical Tests." Journal of Accounting Research, 14(2): 246-276.

Sadka, R. (2006), "Momentum and Post-Earnings-Announcement Drift Anomalies: The Role of Liquidity Risk." Journal of Financial Economics, 80(2): 309-349.

Skinner, D. and R. Sloan (2002), "Earnings Surprises, Growth Expectations, and Stock Returns or Don't Let an Earnings Torpedo Sink Your Portfolio." Review of Accounting Studies, 7((2-3)): 289–312.

Tversky, A. and D. Kahneman (1974), "Judgment Under Uncertainty - Heuristics and Biases." Science, 185(4157): 1124-1131.

Yan, Z. P. and Y. Zhao (2011), "When Two Anomalies Meet: The Post-Earnings Announcement Drift and the Value-Glamour Anomaly." Financial Analysts Journal, 67(6): 46-60.

Zhang, X. F. (2006), "Information Uncertainty and Stock Returns." Journal of Finance, 61(1): 105-136.

Appendix

Appendix A: Extracted Variables

Stock Prices (P)

MSCI Index Price (PI)

Turnover by Volume (VO)

Market Value of Equity (MV)

Quarterly Earnings Announcements WC05901, WC05902, WC05903, WC05904

EPS GAAP (GPS1TR12)

Forward EPS GAAP (GPS1FD12)

Trailing MTB – (1/MTB)

Trailing PE – (1/PE)

Trailing CF – CF/P

Average Annual Growth in Sales over the Previous Five Years

Date of Incorporation

Analyst Recommendation (EPS1NE)

Appendix B: Formulas

Market Model:

Ri,t = αi + βi (Rmt) + ei,t   With E[ei,t] = 0 and VAR[ei,t] = σ^2εi

Ri,t is the return on asset i on period t, Rmt is the return on portfolio m on period t, αi is the intercept of the value of Ri when Rm equals to zero, βi is the slope (estimate of the systematic risk for asset i), ei,t is the zero mean error term on the security i on the period t. Moreover, the variance (σ^2εi), beta (βi), alpha (αi) and the error term (ei,t) are the parameters of the model, estimated by the Ordinary Least Squares (OLS) method.

Beta for stock i:

$$\hat{\beta}i = \frac{\sum_{t=T0+1}^{T1}\left(Rit - \hat{U}i\right)\left(Rmt - \hat{U}m\right)}{\sum_{t=T0+}^{T1}\left(Rm - \hat{U}m\right)^2}$$

Alpha for stock i:

$$\hat{\alpha} = \hat{U}_i - \hat{\beta}i\hat{U}m$$

Variance:

$$\hat{\sigma}_e i = \frac{1}{L1-2}\sum_{t=T0+1}^{T1}\left(Rit - \hat{\alpha} - \hat{\beta}iRmt\right)^2$$

Where:

$\hat{U} = \frac{1}{L1}\sum_{t=T0+1}^{T1} Rit$ and $\hat{U}m = \frac{1}{L1}\sum_{t=T0+1}^{T1} Rmt$

Abnormal Returns

$$ARi,t = Ri,t - \hat{\alpha} - \hat{\beta}_i R_{mt}$$

Where, ARi,t is the abnormal return, which is the disturbance term ε_{it} in the event window of the market model for firm i at the period t, Ri,t is the actual return for firm i at the period t and the $\hat{\alpha}$ - $\hat{\beta}_i R_{mt}$ is the expected return for firm i at the period t.

Logarithmic transformation

$$Ri,t = \text{LN}\left(\frac{Stock\ price\ t}{Stock\ price\ t-1}\right);\ R_{mt} = \text{LN}\left(\frac{Market\ index\ price\ t}{Market\ index\ price\ t-1}\right)$$

Where, Ri, t is the logarithmic return of the stock i for the period t divided by the logarithmic return of the stock i for the day before the period t. The same applies for the market formula, R_{mt}.

Cumulative Abnormal Returns

$$CARi(T1, T2) = \sum_{t=T1}^{T2} AR\ i, t$$

Where, the cumulative abnormal returns over a multi-period event window by summing the average returns from the period T1 until the period T2. This can also be applied to the post-event window starting from the period T2 and goes until the period T3.

Average Abnormal Return

$$AAR = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t}$$

Cumulative Abnormal Return

$$CAAR\ (T1, T2) = \frac{1}{N} \sum_{i=1}^{N} CARi(T1, T2)$$

T1: Standardized Residual Test with Patell Adjustement

$$SARi, t = \frac{AR\ \text{i,t}}{S(AR\ \text{i,t})}$$

Where the standard deviation is according to his facts that the event-window abnormal returns are an out-of-sample forecast and the standard error is adjusted by the forecast error:

$$S_{ARi,t}^{2} = S_{ARt}^{2} \left(1 + \frac{1}{Mi} + \frac{(Rm,t - \bar{R}m)^2}{\sum_{t=0}^{T1}(Rm,t - \bar{R}m)^2}\right)$$

After calculating SAR, we have:

$$SCARi = \sum_{t=Ti,T2}^{T2} SARi, t$$

And finally, to get the patell test:

$$T1\ CAAR = \frac{1}{\sqrt{N}} \sum_{i=1}^{N} \frac{SCARi}{S_{SCAR_t}}$$

With,

$S^2_{CSARt} = L_2 \frac{Mi-2}{Mi-4}$

T2 Rank Test:

$\overline{K}_{T1,T2} = \frac{1}{L2} \sum_{t=T1+1}^{T2} \overline{K}_t$, where $\overline{K}_t = \frac{1}{N_t} \sum_{i=1}^{Nt} Kit$ Where, statics test is:

$T2\ CAAR\ = \sqrt{L2}\ (\frac{\overline{K}_{T1,T2}\ - 0.5}{S_{\overline{k}}}\ )$

And for standard deviation, we have:

$S^2_{\overline{k}}\ \frac{1}{L1+L2} \sum_{t=Ti}^{T2} \frac{Nt}{N} \left(\overline{k}_t - 0.5\right)$

T3 Generalized Sign Test

$\hat{p} = \frac{1}{N} \sum_{i=1}^{N} \frac{1}{L1} \sum_{t=Ti}^{Ti} \varphi_{it}$ where, φ_{it} = 1 if the sign is positive, and 0 otherwise. And the GST is: $T3\ CAAR\ = \frac{\left(w-N_{\hat{p}}\right)}{\sqrt{N_{\hat{p}}(1-\hat{p})}}$

Earnings Surprise

$Earnings\ Surpriseiq = \frac{Reported\ EPSiq - Expected\ EPSiq}{abs(Expected\ EPSiq)}$

Jarque-Bera Test for Normality

JB = $\frac{n}{6}\ (S^2 +\ \frac{1}{4}\ K^2)$

Where, n is represented as the number of observations, S is the skewness and K stands for the kurtosis of the sample's cumulative abnormal return.

Appendix C: Portfolios using Both Anomalies

Table 7 - Full Results: EAAR/ES portfolios using BM as a proxy

BM_rank	obs	MV (M £)	BM	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
Panel A: Earnings Surprise>0 & EAARs>0									
Glamour 1	54	7130	0.17	4.72***	0.52	-0.02	1.61	1.44	3.75
2	45	7434	0.40	4.37***	1.57	3.38	5.08*	4.02	8.21
3	48	9143	0.68	5.54***	-0.62	0.08	4.86	7.06	14.03**
4	68	3865	0.97	4.09***	-0.08	1.15	3.71	3.50	6.02
Value 5	54	6115	3.16	**5.66*****	**1.28**	**3.66**	**5.35**	**0.90**	**3.74**
Panel B: Earnings Surprise<0 & EAARs<0									
Glamour 1	175	6156	0.14	**-4.43*****	**-1.71****	**-3.8***	**-7.51*****	**-10.68****	**-15.75****
2	242	4625	0.33	-4.47***	0.19	-3.23***	-7.61***	-10.71***	-14.57***
3	215	2936	0.53	-5.59***	-0.35	-4.32***	-6.15**	-9.79***	-10.91***
4	244	6781	0.85	-3.96***	-1.27**	-5.47***	-7.39***	-11.52***	-14.49***
Value 5	104	3552	2.58	-7.31***	-2.98***	-9.88**	-12.46**	-15.38***	-15.04***
Spread				**10.09**	**2.99**	**7.46**	**12.86**	**11.58**	**19.49**
Panel C: Earnings Surprise<0 & EAARs>0									
Glamour 1	413	5681	0.16	4.73***	0.85**	-0.52	-0.12	-0.91	-1.25
2	398	4145	0.34	4.39***	-0.07	-1.32**	-1.30	-2.62**	-2.72*
3	333	3207	0.55	4.49***	-0.13	-2.33*	-3.29*	-4.58***	-5.69*
4	332	5984	0.89	4.43***	-0.33*	-0.09*	0.64	1.42	3.08
Value 5	235	2991	2.25	6.4***	0.28	2.20	5.82***	3.74	6.47
Panel D: Earnings Surprise>0 & EAARs<0									
Glamour 1	33	9503	0.17	-3.01***	0.44*	-4.82***	-3**	-4.94*	-8.09*
2	41	9245	0.41	-3.32***	0.56	-1.07**	-2.26	-2.55	-1.97
3	40	10754	0.76	-3.32***	-0.66	-3.55*	-4.6***	-8.81*	-12.74***
4	38	3511	1.07	-3.09***	1.12	-0.32	-0.80	-4.64**	-9.27**
Value 5	30	7884	3.05	-10.09***	1.22	-3.09*	-0.87	-16.02***	-23.74***
Panel E: Earnings Surprise=0 & EAARs>0									
Glamour 1	15	8369	0.09	5.22***	1.94	1.87	-2.81	0.82	1.87
2	11	1023	0.34	8.94***	-3.67	-2.96	-5.66	2.16	2.77
3	11	9010	0.53	5.62***	2.36	4.79	3.91	7.54	12.35*
4	12	11177	0.77	3.49**	-2.05	0.68	-6.61	-9.38	-11.06
Value 5	11	9983	1.18	3.23***	-3.84*	-0.58	4.15	-1.85	3.83
Panel F: Earnings Surprise=0 & EAARs<0									
Glamour 1	9	13529	0.21	-8.56***	-0.78	-11.96***	-15.42	-30.71**	-27.99
2	8	17381	0.35	-2.75**	0.41	1.87	-6.48	-3.98	-7.56
3	8	8027	0.50	-5.11***	1.50	6.41	13.68	20.48	22.90
4	9	14867	0.82	-4.45***	-1.95	-4.85	0.77	3.16	8.07**
Value 5	9	2716	3.38	-13.31***	0.10	-1.02	4.74	-4.81	2.74

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the EP classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and proxy portfolio result can be consulted in Appendix C

Table 8a - Results: EAAR/ES portfolios using EP as a proxy

EP_rank	obs	MV (M £)	EP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
				Panel A: Earnings Surprise>0 & EAARs>0					
Glamour 1	42	2927	-0.33	6.39***	3.69**	0.58	-1.95	-6.88*	-13.59***
2	50	1295	0.05	5.69***	1.18***	2.30	3.13	1.12	3.17
3	56	7429	0.06	4.25***	-0.78	0.34	3.29*	1.23	4.10
4	56	10760	0.08	3.93***	1.45	4.85	8.33**	10.94*	12.88*
Value 5	83	6829	0.17	**4.63*** **	**-0.62**	**-0.58**	**5.15**	**6.61***	**13.99** **
				Panel B: Earnings Surprise<0 & EAARs<0					
Glamour 1	251	1187	-0.31	**-7.66*** **	**-3.32*** **	**-9.73*** **	**-17.25** **	**-25.62*** **	**-30.39*** **
2	312	1577	0.04	-5.18***	-1.51***	-6.31***	-9.6***	-14.62***	-17.94***
3	316	4434	0.06	-4.18***	-0.90	-4.12***	-6.94***	-10.3***	-11.94***
4	317	7162	0.07	-4.1***	-0.42	-3.81***	-6.8***	-10.51***	-12.84***
Value 5	223	5013	0.18	-6.95***	-2.06*	-8.92***	-9.05***	-11.77*	-16.6***
Spread				**12.29**	**2.70**	**9.15**	**22.40**	**32.23**	**44.38**
				Panel C: Earnings Surprise<0 & EAARs>0					
Glamour 1	281	1156	-0.25	6.51***	1.62	1.00	2.75	-0.58	0.42
2	417	1470	0.04	5.21***	0.93**	-0.23	0.64	0.50	0.22
3	524	4228	0.06	4.14***	-0.03	-0.97**	-0.76	-2.05***	-2.09***
4	482	7331	0.08	4.52***	0.00	-0.8*	-0.12	0.11	-0.16
Value 5	318	4208	0.16	5***	-0.26	-1.36*	-1.85	-4.45***	-6.13***
				Panel D: Earnings Surprise>0 & EAARs<0					
Glamour 1	37	1230	-0.28	-9.12***	-2.70	-8.56***	-12.77***	-31.51***	-55.4***
2	31	2759	0.04	-3.4***	3.01**	0.06	0.71	-4.04*	-6.48*
3	44	9791	0.06	-3.21***	0.2*	-3.23**	-3.84*	-9.98**	-13.7**
4	45	9642	0.08	-3.22***	-1.00	-3.85**	-6.58**	-8.58**	-8.62*
Value 5	56	11299	0.20	-4.58***	-0.01	-3.22*	-3.38***	-6.66***	-6.3**
				Panel E: Earnings Surprise=0 & EAARs>0					
Glamour 1	20	486	-0.08	6.15***	-3.94**	3.25	12.40	1.63	12.77
2	25	2476	0.05	5.48***	-3.43	-7.02**	-10.1*	-9.22	-5.47
3	24	6855	0.07	2.48***	0.68	1.20	-6.41**	-4.16	-4.49
4	27	10930	0.09	4.48***	-0.13	2.76	0.99	0.02	-1.33
Value 5	23	10757	0.14	6.4***	2.27	3.15	0.52	-3.86	-8.10
				Panel F: Earnings Surprise=0 & EAARs<0					
Glamour 1	16	311	-0.20	-7.57*	0.44	-13.16	-25.21	-41.41**	-50.12**
2	15	4609	0.04	-5.7***	-2.73	-8.09	-14.56***	-17.25**	-16.9**
3	14	3509	0.07	-3.81***	-0.64	1.86	7.42**	8.56***	13.14***
4	16	8476	0.08	-3.66***	1.95**	4.19	7.25	7.21	6.16
Value 5	18	25770	0.12	-7.49***	-1.56	-2.9*	-0.41	0.14	3.82

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the EP classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and proxy portfolio result can be consulted in Appendix C

Table 8b - Results: EAAR portfolios using EP as a proxy

EP_rank	obs	MV (M £)	EP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
Panel A: EAARs>0									
Glamour 1	309	1059	-0.26	6.26***	1.83**	1.46	3.46	-0.52	0.37
2	461	1390	0.04	5.66***	0.69*	-0.58	-0.18	-0.61	-0.66
3	632	4153	0.06	4.11***	-0.03	-0.77*	-0.33	-1.46***	-1.17***
4	569	7072	0.08	4.45***	0.02	-0.27	0.33	0.48	0.24
Value 5	457	4040	0.16	**4.92*****	**-0.06**	**-0.53**	**0.12**	**-1.5****	**-1.39**
Panel B: EAARs<0									
Glamour 1	291	1089	-0.31	**-7.72*****	**-3.27*****	**-9.85*****	**-18.01*****	**-28.17*****	**-35.28*****
2	348	1468	0.04	-5.34***	-1.09**	-5.95***	-8.36***	-13.6***	-17***
3	371	4247	0.06	-4.01***	-0.81	-4.15***	-6.9***	-10.35***	-12.24***
4	409	7363	0.08	-4.06***	-0.69*	-3.67***	-6.11***	-9.6***	-11.75***
Value 5	292	4170	0.19	-6.49***	-1.21*	-6.95***	-6.84***	-9.17**	-12.12***
Spread				**12.64**	**3.21**	**9.32**	**18.13**	**26.67**	**33.89**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the EP classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and proxy portfolio result can be consulted in Appendix C

Table 9a - Results: EAAR/ES portfolios using CP as a proxy

CP_rank	obs	MV (M £)	CP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
Panel A: Earnings Surprise>0 & EAARs>0									
Glamour 1	51	4067	-0.07	4.69***	-0.56*	-3.24*	-1.73*	-5.06***	-5.7***
2	66	8077	0.02	3.08***	-0.83	-1.97	-0.23	-3.34	-3.88
3	45	6461	0.04	5.25***	1.52	3.63	4.44	3.5	9.67
4	52	4689	0.09	5.12***	-0.57	1.34	3.92	6.07	9.08
Value 5	40	11439	0.33	**6.1*** **	**2.92***	**6.02****	**14.31****	**18.96****	**31.25****
Panel B: Earnings Surprise<0 & EAARs<0									
Glamour 1	194	3281	-0.55	**-6.35*****	**-0.94**	**-5.36*****	**-7.86*****	**-11.32*****	**-11.13*****
2	241	7225	0.02	-3.73***	0.93*	-1.22*	-2.67***	-5.46***	-7.75***
3	240	3995	0.04	-4.48***	-1.46***	-4.71***	-8.86***	-11.98***	-14.83***
4	227	5418	0.09	-4.19***	-1.58***	-6.5***	-8.47***	-13.67***	-18.3***
Value 5	219	5494	1.09	-5.97***	-1.95*	-8.44***	-11.53***	-16.91***	-19.08***
Spread				**12.45**	**3.86**	**11.38**	**22.17**	**30.28**	**42.38**
Panel C: Earnings Surprise<0 & EAARs>0									
Glamour 1	283	3698	-0.48	4.59***	-0.4	-0.63	-0.23	-3.47**	-3.91*
2	389	6865	0.02	4.17***	0.13	-1.38***	-1.36**	-1.2**	-0.83**
3	369	4137	0.05	4.58***	0.24	-1.44***	-0.02	-0.72	-0.72
4	331	5020	0.10	4.79***	0.66*	0.09	0.9	0.27	3.02
Value 5	260	4436	1.07	5.44***	0.62	0.73	0.25	-1.2*	-1.18*
Panel D: Earnings Surprise>0 & EAARs<0									
Glamour 1	32	2495	-0.33	-7.93***	-2.77***	-9.7***	-15.21***	-29.78**	-49.25***
2	32	9432	0.02	-2.62***	1.9	-2.29*	0.16	-2.75	-1.39
3	44	7629	0.04	-2.78***	-0.01	-1.41*	-1.13*	-6.17***	-8.51***
4	38	9439	0.09	-4.04***	0.98	-1.11*	-3.93**	-8.15**	-11.22*
Value 5	35	10039	0.67	-5.85***	1.56	-0.89	-1.3	-6.46**	-10.24**
Panel E: Earnings Surprise=0 & EAARs>0									
Glamour 1	12	4608	-0.54	7.84***	0.9	-1.29	-2.04	-0.42	1.8
2	12	12548	0.03	3.28***	0.67	4.45	2.89	7.77*	11.15*
3	12	10021	0.07	4.01***	0.22	-0.09	-4.03	-4.38*	-8.25**
4	11	12148	0.12	4.63***	-2.89	1.59	3.22	11.41	22.31**
Value 5	11	3274	0.33	4.26***	-0.8	7.53*	11.78*	13.81*	16.54
Panel F: Earnings Surprise=0 & EAARs<0									
Glamour 1	10	787	-0.97	-6.03***	-3.43*	-18.8	-26.94	-49.1*	-52.07
2	6	10888	0.02	-5.17**	-1.4	-2.19	-1.57	-8.55	-12.56
3	10	12874	0.04	-6.15***	1.22	-1.81	3.97	8.75	21.67**
4	6	16737	0.08	-3.78**	0.35	-0.94	0.33	1.2	5.27
Value 5	8	31626	0.59	-5.49**	-2.75	3.4	7.11	12.22	14.23

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the CP classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and proxy portfolio result can be consulted in Appendix C

Table 9b - Results: EAAR portfolios using CP as a proxy

CP_rank	obs	MV (M £)	CP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
				Panel A: EAARs>0					
Glamour 1	322	3149	-0.47	4.7***	-0.38	-0.99*	-0.34	-3.64***	-4.11*
2	475	6954	0.02	4.04***	-0.04	-1.42***	-1.25**	-1.59***	-1.22**
3	431	4123	0.05	4.59***	0.39	-0.88**	0.44	-0.19	0.35
4	419	5037	0.10	4.83***	0.63*	0.53	1.48	1.46	4.45*
Value 5	297	4062	1.08	**5.55*****	**0.59**	**1.48**	**2.2**	**1.77**	**3.3**
				Panel B: EAARs<0					
Glamour 1	228	2625	-0.53	**-6.6*****	**-1.09***	**-6.46*****	**-9.21****	**-15.59*****	**-18.03*****
2	286	7391	0.02	-3.64***	0.71	-1.58**	-3.18*	-5.41***	-7.62***
3	298	4011	0.04	-4.32***	-1.02**	-3.9***	-6.8***	-10.12***	-12.21***
4	270	5266	0.09	-4.19***	-1.3**	-5.83***	-7.77***	-12.81***	-17.04***
Value 5	260	5222	1.10	-5.91***	-1.46***	-7.1***	-9.68**	-14.69***	-16.94*
Spread				**12.15**	**1.68**	**7.94**	**11.41**	**17.36**	**21.33**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the EP classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and proxy portfolio result can be consulted in Appendix C

Table 10a - EAAR/ES portfolios using SG as a proxy

SG_rank	obs	MV (M £)	SG	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
Panel A: Earnings Surprise>0 & EAARs>0									
Value 1	57	7535	-0.64	**5.22*** **	**0.29**	**1.72**	**4.72**	**1.26**	**4.55**
2	50	5403	-0.01	5.32***	4.07	5.28	8.67	8.35	12.14
3	45	5014	0.07	5.54***	1.05	-0.24	6.21	7.34*	11.83**
4	74	7696	0.15	3.57***	-0.32	0.64	1.41**	1.94**	4.09
Glamour 5	58	6085	0.72	4.64***	-0.33	1.23	3.36	6.32	7.42
Panel B: Earnings Surprise<0 & EAARs<0									
Value 1	145	6900	-0.61	-5.1***	-1.94***	-5.98**	-7.69***	-11.2***	-13.69***
2	248	2532	0.00	-6.61***	-2.72***	-10**	-14.64**	-20.98*	-24.82***
3	252	2226	0.06	-5.97***	-0.64	-3.99**	-7.08***	-12.26*	-16.62***
4	287	4006	0.13	-4.42***	-1.1**	-5.15***	-8.59***	-12.09**	-15.65**
Glamour 5	292	4596	0.98	**-4.56*** **	**-0.67**	**-4.71***	**-7.11*** **	**-10.21*** **	**-12.12*** **
Spread				**9.78**	**0.96**	**6.43**	**11.83**	**11.47**	**16.67**
Panel C: Earnings Surprise<0 & EAARs>0									
Value 1	410	6501	-0.62	4.95***	0.38	0.38	1.71	0.45	2.95
2	308	2429	0.00	5.73***	2.17***	2.11*	3.73*	2.68	2.75
3	397	2215	0.07	5.04***	0.05	-0.88	-1.26	-2.41**	-4.12***
4	467	3784	0.14	4.33***	-0.36	-1.33***	-1.02**	-1.62***	-2.84***
Glamour 5	407	4394	1.00	4.52***	0.3	-0.8*	-0.31	-1.15	-1.15
Panel D: Earnings Surprise>0 & EAARs<0									
Value 1	41	10689	-0.67	-3.53***	-1.07	-2.46	-1.41	0.64	-1.93
2	43	3445	-0.07	-5.85***	-0.55	-8.78*	-17.07**	-31.45***	-40.7***
3	37	7515	0.05	-6.22***	2.46	-1.87**	-2.85**	-8.91*	-14.73**
4	47	8999	0.15	-4.07***	1.01	1.77	1.84	-1.28*	-4.93***
Glamour 5	44	4312	1.34	-3.08***	1.12	-3.12**	-1.14*	-8.26*	-8.5***
Panel E: Earnings Surprise=0 & EAARs>0									
Value 1	18	9906	-0.97	4.84***	0.37	0.86	-3.02	-9.33	-10.93
2	16	1007	-0.01	6.05***	-0.66	5.22	10.66	1.99	-1.43
3	14	1560	0.05	7.05***	-7.13**	-4.7	-5.28	-18.16*	-15.12
4	18	8070	0.13	4.44***	2.13	6.34*	8.29	14.47	19.88**
Glamour 5	21	9722	0.48	4.54***	0.27	-1.35	-3.9	3.19	2.43
Panel F: Earnings Surprise=0 & EAARs<0									
Value 1	9	17566	-1.42	-11.77**	1	2.02	1.43	-1.86	-0.9
2	9	8129	-0.01	-5.78***	-5.14	-10.14	-10.08	-17.01	-17.83
3	13	12137	0.08	-6.54***	-0.27	-8.07**	-3.57	-0.8	6.58
4	12	9024	0.19	-5.41***	-2.74	-0.48	0.14	6.54	4.18
Glamour 5	10	7789	0.42	-1.87**	-2.31	-3.28	-4.64	-9.91	-13.64

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the EP classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and proxy portfolio result can be consulted in Appendix C

Table 10b - Results: EAAR portfolios using SG as a proxy

SG_rank	obs	MV (M £)	SG	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
				Panel A: EAARs>0					
Value 1	485	6255	-0.63	**4.97*** **	**0.36**	**0.54**	**1.88**	**0.19**	**2.53**
2	369	2352	0.00	5.7***	2.22*	2.82**	4.65**	3.11	3.73
3	446	2121	0.06	5.25***	0.02	-1	-0.63	-1.75*	-2.86**
4	559	3721	0.13	4.1***	-0.34*	-0.93***	-0.54**	-0.72**	-1.17**
Glamour 5	501	4243	0.98	4.62***	0.3	-0.48	0.19	0.09	0.12
				Panel B: EAARs<0					
Value 1	345	6422	-0.67	-5.02***	-1.32*	-5.05***	-6***	-9.71***	-12.05***
2	294	2496	-0.01	-6.58***	-3.02*	-10.09**	-15.29**	-22.38**	-26.78***
3	230	2122	0.06	-6.07***	-0.18	-4.07***	-6.77***	-11.2***	-15.26***
4	355	3823	0.13	-4.42***	-0.92**	-4.35***	-7.53***	-11.02***	-14.89***
Glamour 5	350	4398	0.95	**-4.31*** **	**-0.47**	**-4.16***	**-5.76*** **	**-9.08*** **	**-10.71*** **
Spread				**9.28**	**0.83**	**4.7**	**7.64**	**9.27**	**13.24**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the EP classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every panel and proxy portfolio result can be consulted in Appendix C

Appendix D: Other Regressions and full Results

The Regression Analysis was estimated in the ESM program, inserting the following regression equation for: book-to-market, earnings-to-price, cash-flow-to-price and sales growth proxies.

$CAAR\mathrm{i},t=\alpha+\beta 1*\#CAR\_-1\_1i(\mathrm{EAAR})+\beta 2*Agei,t+\beta 3*Coveragei,t+\beta 4*Betai+\beta 5*ESi,t+\beta 6*Market\ Capi,t+\beta 7*B\mathrm{M}i,t+\varepsilon$

$CAAR\mathrm{i},t=\alpha+\beta 1*\#CAR\_-1\_1i(\mathrm{EAAR})+\beta 2*Agei,t+\beta 3*Coveragei,t+\beta 4*Betai+\beta 5*ESi,t+\beta 6*Market\ Capi,t+\beta 7*\mathrm{EP}i,t+\varepsilon$

$CAAR\mathrm{i},t=\alpha+\beta 1*\#CAR\_-1\_1i(\mathrm{EAAR})+\beta 2*Agei,t+\beta 3*Coveragei,t+\beta 4*Betai+\beta 5*ESi,t+\beta 6*Market\ Capi,t+\beta 7*\mathrm{CP}i,t+\varepsilon$

$CAAR\mathrm{i},t=\alpha+\beta 1*\#CAR\_-1\_1i(\mathrm{EAAR})+\beta 2*Agei,t+\beta 3*Coveragei,t+\beta 4*Betai+\beta 5*ESi,t+\beta 6*Market\ Capi,t+\beta 7*\mathrm{SG}i,t+\varepsilon$

Where:

CAAR_i,t = Cumulative Average Abnormal Return for portfolio i in post-event window t

CAR_-1;1 = Cumulative Abnormal Return for stock i in event window (-1;1) for event at time t

Age_i,t = Difference between the date of incorporation and the date of the event for the stock i

Coverage_i,t = Number of Analysts covering a stock i at time t (event date -3 days)

Beta_i = Estamated beta for stock i, calculated by the market model

EPS_i,t= Dummy variable for Earnings Surprise (1= ES >0, 0=ES <0) for stock i at the event date t.

Market Cap_i,t = Market value of equity in million pounds for the stock i at the time t (event date -3 days)

BM_i,t = Book-to-market for the stock i at the time t (event date -3 days)

EP_i,t = Earnings-to-price for the stock i at the time t (event date -3 days)

CP_i,t = Cash-flow-to-price for the stock i at the time t (event date -3 days)

SG_i,t = Annual average growth in sales over five years for the stock i at the time t (event date -3 days)

ε = Error term

Table 11 - Regression Analysis of PEAD using EP as a proxy

Dependent Variable	EAAR	Age	Beta	Coverage	EP	ES	Market Cap	Constant	R^2
Panel A:EAAR>0									**N=2428**
CAAR(2:22)	-0.1512 (-2.9267***)								0.0058
CAAR(2:63)	-0.4368 (-6.8696***)		0.0198 3.1957***					-0.0098 (-1.9196*)	0.0245
CAAR(2:126)	-0.8712 (-19.805***)				-0.0076 (-1.416***)		0 (-1.7154*)	0.0705 20.033***	0.1608
CAAR(2:189)	-0.9302 (-7.1225***)				-0.0202 (-1.2634*)	0.0245 1.657*		0.0557 5.3234***	0.0242
CAAR(2:252)	-0.9903 (-4.939***)					0.0435 1.9203*		0.066 4.1096***	0.013
Panel B:EAAR<0									**N=1711**
CAAR(2:22)	-0.1315 (-2.484**)			-0.0001 (-0.3529**)					0.0082
CAAR(2:63)	-0.6653 (-9.835***)		0.0135 1.785*	-0.0003 (-0.557***)				-0.0153 (-2.4208**)	0.0616
CAAR(2:126)	-0.9075 (-17.005***)	0.0003 2.4327**	-0.0116 (-1.9345*)		0.0122 1.6165***	0.0156 2.1774**		-0.0731 (-14.6459***)	0.1669
CAAR(2:189)	-1.06 (-7.5892***)	0.0008 2.1805**		0.0049 4.6653*	0.0387 1.9617***	0.0341 1.8146*		-0.1772 (-13.5612***)	0.0636
CAAR(2:252)	-1.0092 (-4.8066***)	0.0013 2.411**	-0.0407 (-1.7332*)	0.008 5.1138***	0.0938 3.1666***			-0.2352 (-11.9743***)	0.0508

Note: In this table is possible to analyse the regression for the post-earnings announcement drift using book-to-market as a proxy. For panel A we have positive earnings announcement abnormal returns sample with 2040 events and for the panel B we have same but when is negative with 1382 events. The dependent variables are the cumulative average abnormal return for the post-event windows (2;22), (2;63), (2;126), (2;189) and (2;252). The independent variables are the earnings announcement abnormal return (EAAR) for the event window (-1;1). Age: Difference between the date of incorporation and the event date. Coverage: Number of analysts covering a stock. Beta: estimated beta for stock i, calculated by the market model. ES: earnings surprise. Market Cap: market value of equity in million pounds for the stock I at the event date. EP: earnings-to-price ratio for the stock i at the event date. Constant: interception value in the y-axis. R^2: coefficient of determination. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1%. The regression equation is determined by the following formula:

$CAAR\text{i},t=\alpha+\beta1*\#CAR\_{-1}\_1i(\text{EAAR})+\beta2*Agei,t+\beta3*Coveragei,t+\beta4*Betai+\beta5*ESi,t+\beta6*Market\ Capi,t+\beta7*\text{EP}i,t$ + Ɛ. For more details about the formula please see Appendix D.

Table 12 - Regression Analysis of PEAD using CP as a proxy

Dependent Variable	EAAR	Age	Beta	Coverage	CP	ES	Market Cap	Constant	R^2
Panel A:EAAR>0									**N=1944**
CAAR(2:22)	-0.1257 (-2.189**)			-0.0004 (-1.116**)					0.0073
CAAR(2:63)	-0.3819 (-5.44***)		0.0181 2.85***	-0.0009 (-2.19***)	-0.0048 (-4.91**)				0.0332
CAAR(2:126)	-0.9899 (-20.26***)				-0.0001 (-0.138***)		0 (-1.84*)	0.0754 17.879***	0.1975
CAAR(2:189)	-0.8251 (-5.82***)							0.0631 5.1575***	0.0215
CAAR(2:252)	-0.9273 (-4.263***)							0.0868 4.6242***	0.0135
Panel B:EAAR<0									**N=1342**
CAAR(2:22)	-0.1061 (-1.98**)					-0.0171 (-2.49**)			0.0108
CAAR(2:63)	-0.6108 (-8.883***)							-0.0181 (-2.4189**)	0.0613
CAAR(2:126)	-0.9397 (-18.023***)	0.0002 1.8244*			0.0004 0.3664*			-0.064 (-11.297***)	0.2088
CAAR(2:189)	-1.3097 (-9.014***)			0.0036 3.4671***	-0.0082 (-2.993***)			-0.1622 (-10.28***)	0.0802
CAAR(2:252)	-1.3965 (-6.626***)	0.0009 1.817*		0.0056 3.6621***	-0.0124 (-3.126***)			-0.2143 (-9.3588***)	0.0577

Note: In this table is possible to analyse the regression for the post-earnings announcement drift using book-to-market as a proxy. For panel A we have positive earnings announcement abnormal returns sample with 2040 events and for the panel B we have same but when is negative with 1382 events. The dependent variables are the cumulative average abnormal return for the post-event windows (2;22), (2;63), (2;126), (2;189) and (2;252). The independent variables are the earnings announcement abnormal return (EAAR) for the event window (-1;1). Age: Difference between the date of incorporation and the event date. Coverage: Number of analysts covering a stock. Beta: estimated beta for stock i, calculated by the market model. ES: earnings surprise. Market Cap: market value of equity in million pounds for the stock I at the event date. CP: cash-flow-to-price ratio for the stock i at the event date. Constant: interception value in the y-axis. R^2: coefficient of determination. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1%. The regression equation is determined by the following formula: $CAAR\mathrm{i},t=\alpha+\beta1*\#CAR\_-1\_1i(\mathrm{EAAR})+\beta2*Agei,t+\beta3*Coveragei,t+\beta4*Betai+\beta5*ESi,t+\beta6*Market\ Capi,t+\beta7*\mathrm{CP}i,t + \mathcal{E}$. For more details about the formula please see Appendix D.

Table 13 - Regression Analysis of PEAD using SG as a proxy

Dependent Variable	EAAR	Age	Beta	Coverage	ES	Market Cap	SG	Constant	R^2
Panel A:EAAR>0									**N=2360**
CAAR(2:22)	-0.1606 (-3.022***)		0.0087 1.7483*				-0.0004 (-0.3368**)		0.0072
CAAR(2:63)	-0.5118 (-7.85***)		0.0167 2.728***					-0.0086 (-1.697*)	0.0298
CAAR(2:126)	-0.8786 (-19.096***)				0.002 0.4109*		0.001 0.9676***	0.0707 19.773***	0.1552
CAAR(2:189)	-0.7868 (-5.8067***)			-0.0022 (-2.6765*)			0.0017 0.5607***	0.0599 5.6891***	0.0192
CAAR(2:252)	-0.6364 (-3.0725***)			-0.0034 (-2.7079*)			0.0031 0.6632***	0.0667 4.1454***	0.0094
Panel B:EAAR<0									**N=1634**
CAAR(2:22)	-0.1466 (-2.8265***)			0.0001 0.262*					0.008
CAAR(2:63)	-0.658 (-9.7633***)							-0.0177 (-2.8193***)	0.0574
CAAR(2:126)	-0.8967 (-16.373***)	0.0003 2.3946**		0.0016 4.0352**			-0.0005 (-0.307***)	-0.0743 (-14.603***)	0.163
CAAR(2:189)	-1.0191 (-7.265***)	0.0007 1.8648*		0.0043 4.1436**			0.0019 0.4907***	-0.1705 (-13.0795***)	0.0575
CAAR(2:252)	-1.0083 (-4.8202***)	0.0011 2.0293**					0.0022 0.3894***	-0.2144 (-11.027***)	0.0394

Note: In this table is possible to analyse the regression for the post-earnings announcement drift using book-to-market as a proxy. For panel A we have positive earnings announcement abnormal returns sample with 2040 events and for the panel B we have same but when is negative with 1382 events. The dependent variables are the cumulative average abnormal return for the post-event windows (2;22), (2;63), (2;126), (2;189) and (2;252). The independent variables are the earnings announcement abnormal return (EAAR) for the event window (-1;1). Age: Difference between the date of incorporation and the event date. Coverage: Number of analysts covering a stock. Beta: estimated beta for stock i, calculated by the market model. ES: earnings surprise. Market Cap: market value of equity in million pounds for the stock I at the event date. SG: annual average growth in sales over five years for the stock i at the event date. Constant: interception value in the y-axis. R^2: coefficient of determination. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1%. The regression equation is determined by the followingformula:$CAAR\mathrm{i},t=\alpha+\beta 1*\#CAR\_{-1}\_1i(\mathrm{EAAR})+\beta 2*Agei,t+\beta 3*Coveragei,t+\beta 4*Betai+\beta 5*ESi,t+\beta 6*Market\ Capi,t+\beta 7*\mathrm{SG}i,t$ + Ɛ. For more details about the formula please see Appendix D.

EAAR >0 for BM

Dependent Variable: #CAR_2_22

constant	0.0039	0.0052	0.7441	0.4574	-0.0064	0.0142
#CAR_-1_1	-0.2046	0.0547	-3.7411	0.0002	-0.3122	-0.0970
age	0.0002	0.0001	1.4868	0.1381	0.0000	0.0004
beta	0.0106	0.0051	2.0684	0.0395	0.0005	0.0207
bm	-0.0083	0.0060	-1.3717	0.1712	-0.0201	0.0036
coverage	-0.0007	0.0003	-2.6247	0.0091	-0.0013	-0.0002
eps	0.0038	0.0056	0.6804	0.4968	-0.0072	0.0148
market_cap	0.0000	0.0000	0.5685	0.5701	0.0000	0.0000

Observations	2040	F (7 , 2...	4.2660
R²	0.0145	Prob. F	0.0001
Adj. R²	0.0111	Log like...	2142.2...
AIC	-2.0924	SIC	-2.0704

Dependent Variable: #CAR_2_63

	Coef.	Std. Err.	t-Statistic	Prob.	[95% C...	Intervall]
constant	-0.0127	0.0065	-1.9496	0.0522	-0.0254	0.0001
#CAR_-1_1	-0.4358	0.0680	-6.4105	0.0000	-0.5696	-0.3020
age	0.0000	0.0001	-0.1378	0.8905	-0.0003	0.0002
beta	0.0188	0.0064	2.9452	0.0035	0.0062	0.0314
bm	-0.0045	0.0075	-0.5957	0.5518	-0.0192	0.0103
coverage	-0.0003	0.0003	-0.9507	0.3425	-0.0010	0.0003
eps	0.0085	0.0070	1.2147	0.2254	-0.0052	0.0222
market_cap	0.0000	0.0000	0.9860	0.3249	0.0000	0.0000

Observations	2040	F (7 , 2...	7.8321
R^2	0.0263	Prob. F	0.0000
Adj. R^2	0.0229	Log like...	1698.1...

Dependent Variable: #CAR_2_126

constant	0.0789	0.0047	16.9659	0.0000	0.0697	0.0881
#CAR_-1_1	-0.9311	0.0487	-19.1268	0.0000	-1.0269	-0.8353
age	0.0000	0.0001	0.2389	0.8113	-0.0002	0.0002
beta	-0.0033	0.0046	-0.7155	0.4749	-0.0123	0.0057
bm	-0.0157	0.0054	-2.9293	0.0037	-0.0263	-0.0052
coverage	-0.0016	0.0002	-6.4084	0.0000	-0.0020	-0.0011
eps	0.0035	0.0050	0.6968	0.4865	-0.0063	0.0133
market_cap	0.0000	0.0000	3.2451	0.0013	0.0000	0.0000

Observations	2040	F (7 , 2...	61.5558
R^2	0.1750	Prob. F	0.0000
Adj. R^2	0.1721	Log like...	2379.4...
AIC	-2.3250	SIC	-2.3029

Dependent Variable: #CAR_2_189

constant	0.0710	0.0130	5.4448	0.0000	0.0454	0.0967
#CAR_-1_1	-0.8450	0.1365	-6.1886	0.0000	-1.1137	-0.5763
age	0.0000	0.0003	0.0680	0.9459	-0.0005	0.0005
beta	-0.0280	0.0128	-2.1832	0.0298	-0.0532	-0.0028
bm	0.0031	0.0151	0.2052	0.8376	-0.0266	0.0327
coverage	-0.0009	0.0007	-1.2786	0.2020	-0.0022	0.0005
eps	0.0252	0.0140	1.8018	0.0726	-0.0023	0.0528
market_cap	0.0000	0.0000	0.0105	0.9917	0.0000	0.0000

Observations	2040	F (7 , 2...	7.6560
R^2	0.0257	Prob. F	0.0000
Adj. R^2	0.0223	Log like...	275.5005
AIC	-0.2623	SIC	-0.2402

Dependent Variable: #CAR_2_252

constant	0.0961	0.0203	4.7251	0.0000	0.0561	0.1361
#CAR_-1_1	-1.0328	0.2128	-4.8526	0.0000	-1.4516	-0.6139
age	0.0002	0.0004	0.5068	0.6126	-0.0006	0.0010
beta	-0.0474	0.0200	-2.3721	0.0183	-0.0867	-0.0081
bm	-0.0098	0.0235	-0.4158	0.6778	-0.0560	0.0364
coverage	-0.0009	0.0011	-0.8759	0.3818	-0.0030	0.0012
eps	0.0411	0.0218	1.8838	0.0606	-0.0018	0.0840
market_cap	0.0000	0.0000	0.6886	0.4916	0.0000	0.0000
Observations	2040		F (7 , 2...	5.4284		
R^2	0.0184		Prob. F	0.0000		
Adj. R^2	0.0150		Log like...	-629.87...		
AIC	0.6254		SIC	0.6474		

EAAR Negative: BM

Dependent Variable: #CAR_2_22

	Coef.	Std. Err.	t-Statistic	Prob.	[95% C...	Interval]
constant	-0.0015	0.0055	-0.2807	0.7792	-0.0123	0.0092
#CAR_-1_1	-0.1313	0.0618	-2.1246	0.0344	-0.2529	-0.0097
age	0.0001	0.0001	0.6182	0.5369	-0.0002	0.0003
beta	0.0011	0.0059	0.1816	0.8560	-0.0105	0.0127
bm	0.0000	0.0012	0.0157	0.9875	-0.0024	0.0024
coverage	0.0000	0.0004	0.1159	0.9078	-0.0007	0.0008
eps	-0.0101	0.0069	-1.4731	0.1418	-0.0237	0.0034
market_cap	0.0000	0.0000	0.0615	0.9510	0.0000	0.0000
Observations	1382		F (7 , 1...	1.0242		
R^2	0.0052		Prob. F	0.4120		
Adj. R^2	0.0001		Log like...	1432.3...		

Dependent Variable: #CAR_2_63

constant	-0.0126	0.0069	-1.8348	0.0675	-0.0261	0.0009
#CAR_-1_1	-0.5691	0.0775	-7.3406	0.0000	-0.7217	-0.4165
age	0.0000	0.0002	0.0620	0.9506	-0.0003	0.0003
beta	0.0025	0.0074	0.3352	0.7377	-0.0121	0.0170
bm	0.0016	0.0015	1.0557	0.2920	-0.0014	0.0047
coverage	0.0002	0.0005	0.3791	0.7049	-0.0008	0.0012
eps	-0.0082	0.0086	-0.9538	0.3409	-0.0252	0.0087
market_cap	0.0000	0.0000	-0.1804	0.8570	0.0000	0.0000
Observations	1382		F (7 , 1...	8.0213		
R^2	0.0393		Prob. F	0.0000		
Adj. R^2	0.0344		Log like...	1118.7...		
AIC	-1.6075		SIC	-1.5772		

Dependent Variable: #CAR_2_126

constant	-0.0728	0.0058	-12.5454	0.0000	-0.0842	-0.0614
#CAR_-1_1	-1.0513	0.0655	-16.0426	0.0000	-1.1802	-0.9223
age	0.0003	0.0001	2.1625	0.0314	0.0000	0.0006
beta	-0.0034	0.0063	-0.5415	0.5886	-0.0157	0.0089
bm	0.0009	0.0013	0.6897	0.4909	-0.0017	0.0035
coverage	0.0012	0.0004	2.7986	0.0055	0.0003	0.0020
eps	0.0130	0.0073	1.7809	0.0759	-0.0014	0.0273
market_cap	0.0000	0.0000	0.3204	0.7489	0.0000	0.0000

Observations	1382	F (7 , 1...	40.4368
R^2	0.1708	Prob. F	0.0000
Adj. R^2	0.1666	Log like...	1351.1...
AIC	-1.9438	SIC	-1.9135

Dependent Variable: #CAR_2_189

constant	-0.1606	0.0143	-11.2009	0.0000	-0.1888	-0.1324
#CAR_-1_1	-1.2710	0.1619	-7.8498	0.0000	-1.5897	-0.9524
age	0.0007	0.0003	1.9259	0.0551	0.0000	0.0013
beta	-0.0110	0.0155	-0.7135	0.4761	-0.0414	0.0194
bm	0.0001	0.0032	0.0357	0.9715	-0.0062	0.0065
coverage	0.0037	0.0010	3.5658	0.0004	0.0016	0.0057
eps	0.0337	0.0180	1.8689	0.0626	-0.0018	0.0691
market_cap	0.0000	0.0000	-0.1336	0.8938	0.0000	0.0000

Observations	1382	F (7 , 1...	13.4327
R^2	0.0641	Prob. F	0.0000
Adj. R^2	0.0593	Log like...	101.0368
AIC	-0.1346	SIC	-0.1044

Dependent Variable: #CAR_2_252

constant	-0.2027	0.0210	-9.6688	0.0000	-0.2440	-0.1615
#CAR_-1_1	-1.1854	0.2368	-5.0067	0.0000	-1.6514	-0.7195
age	0.0008	0.0005	1.6946	0.0912	-0.0001	0.0018
beta	-0.0169	0.0226	-0.7461	0.4562	-0.0613	0.0276
bm	-0.0022	0.0047	-0.4566	0.6483	-0.0115	0.0071
coverage	0.0056	0.0015	3.7010	0.0003	0.0026	0.0085
eps	0.0503	0.0263	1.9098	0.0571	-0.0015	0.1021
market_cap	0.0000	0.0000	-0.5488	0.5836	0.0000	0.0000

Observations	1382	F (7 , 1...	8.0555
R^2	0.0394	Prob. F	0.0000
Adj. R^2	0.0345	Log like...	-424.10...
AIC	0.6253	SIC	0.6556

EAAR >0 EP

Dependent Variable: #CAR_2_22

constant	0.0024	0.0041	0.5845	0.5594	-0.0057	0.0106
#CAR_-1_1	-0.1512	0.0517	-2.9267	0.0037	-0.2529	-0.0495
age	0.0001	0.0001	0.6993	0.4849	-0.0001	0.0003
beta	0.0071	0.0050	1.4233	0.1557	-0.0027	0.0170
coverage	-0.0005	0.0003	-1.6482	0.1004	-0.0012	0.0001
ep	0.0012	0.0063	0.1943	0.8461	-0.0112	0.0137
eps	0.0026	0.0058	0.4415	0.6591	-0.0089	0.0141
market_cap	0.0000	0.0000	-0.4113	0.6811	0.0000	0.0000

Observations	2428	F (7 , 2...	2.0133
R^2	0.0058	Prob. F	0.0500
Adj. R^2	0.0029	Log like...	2329.0...
AIC	-1.9119	SIC	-1.8928

Dependent Variable: #CAR_2_63

constant	-0.0098	0.0051	-1.9196	0.0559	-0.0198	0.0002
#CAR_-1_1	-0.4368	0.0636	-6.8696	0.0000	-0.5620	-0.3117
age	-0.0001	0.0001	-0.4329	0.6654	-0.0003	0.0002
beta	0.0198	0.0062	3.1957	0.0015	0.0076	0.0319
coverage	-0.0006	0.0004	-1.5817	0.1148	-0.0014	0.0002
ep	-0.0041	0.0078	-0.5193	0.6039	-0.0194	0.0113
eps	0.0108	0.0072	1.5004	0.1346	-0.0034	0.0249
market_cap	0.0000	0.0000	0.6461	0.5187	0.0000	0.0000

Observations	2428	F (7 , 2...	8.6651
R^2	0.0245	Prob. F	0.0000
Adj. R^2	0.0216	Log like...	1825.3...
AIC	-1.4970	SIC	-1.4779

Dependent Variable: #CAR_2_126

constant	0.0705	0.0035	20.0332	0.0000	0.0636	0.0775
#CAR_-1_1	-0.8712	0.0440	-19.8048	0.0000	-0.9578	-0.7847
age	0.0000	0.0001	0.1994	0.8421	-0.0002	0.0002
beta	0.0002	0.0043	0.0477	0.9620	-0.0082	0.0086
coverage	-0.0014	0.0003	-5.1787	0.0000	-0.0020	-0.0009
ep	-0.0076	0.0054	-1.4164	0.1577	-0.0183	0.0030
eps	0.0023	0.0050	0.4708	0.6381	-0.0074	0.0121
market_cap	0.0000	0.0000	-1.7154	0.0873	0.0000	0.0000

Observations	2428	F (7 , 2...	66.2264
R^2	0.1608	Prob. F	0.0000
Adj. R^2	0.1583	Log like...	2720.0...
AIC	-2.2340	SIC	-2.2149

Dependent Variable: #CAR_2_189

constant	0.0557	0.0105	5.3234	0.0000	0.0351	0.0762
#CAR_-1_1	-0.9302	0.1306	-7.1225	0.0000	-1.1872	-0.6732
age	0.0001	0.0003	0.4032	0.6871	-0.0004	0.0006
beta	-0.0001	0.0127	-0.0056	0.9956	-0.0251	0.0249
coverage	-0.0015	0.0008	-1.8434	0.0663	-0.0031	0.0001
ep	-0.0202	0.0160	-1.2634	0.2074	-0.0518	0.0113
eps	0.0245	0.0148	1.6570	0.0986	-0.0046	0.0535
market_cap	0.0000	0.0000	0.2431	0.8081	0.0000	0.0000

Observations	2428	F (7 , 2...	8.5586
R^2	0.0242	Prob. F	0.0000
Adj. R^2	0.0213	Log like...	77.9311
AIC	-0.0576	SIC	-0.0385

Dependent Variable: #CAR_2_252

constant	0.0660	0.0160	4.1096	0.0001	0.0344	0.0975
#CAR_-1_1	-0.9903	0.2005	-4.9392	0.0000	-1.3849	-0.5957
age	0.0002	0.0004	0.3996	0.6897	-0.0007	0.0010
beta	0.0028	0.0195	0.1423	0.8870	-0.0356	0.0411
coverage	-0.0019	0.0012	-1.5237	0.1286	-0.0044	0.0006
ep	-0.0168	0.0246	-0.6836	0.4948	-0.0652	0.0316
eps	0.0435	0.0227	1.9203	0.0558	-0.0011	0.0881
market_cap	0.0000	0.0000	0.0684	0.9455	0.0000	0.0000

Observations	2428	F (7 , 2...	4.5493
R²	0.0130	Prob. F	0.0000
Adj. R²	0.0101	Log like...	-962.83...
AIC	0.7997	SIC	0.8188

EAAR Negative:EP

Dependent Variable: #CAR_2_22

constant	0.0001	0.0050	0.0173	0.9862	-0.0097	0.0098
#CAR_-1_1	-0.1315	0.0529	-2.4840	0.0135	-0.2357	-0.0273
age	0.0001	0.0001	0.6306	0.5288	-0.0002	0.0004
beta	0.0011	0.0059	0.1796	0.8576	-0.0106	0.0127
coverage	-0.0001	0.0004	-0.3529	0.7244	-0.0009	0.0006
ep	0.0159	0.0075	2.1258	0.0343	0.0012	0.0306
eps	-0.0111	0.0071	-1.5613	0.1195	-0.0252	0.0029
market_cap	0.0000	0.0000	0.2282	0.8197	0.0000	0.0000

Observations	1711	F (7 , 1...	2.0213
R²	0.0082	Prob. F	0.0492
Adj. R²	0.0042	Log like...	1566.4...
AIC	-1.8217	SIC	-1.7962

Dependent Variable: #CAR_2_63

constant	-0.0153	0.0063	-2.4208	0.0161	-0.0278	-0.0029
#CAR_-1_1	-0.6653	0.0676	-9.8354	0.0000	-0.7984	-0.5322
age	-0.0001	0.0002	-0.3710	0.7109	-0.0004	0.0003
beta	0.0135	0.0076	1.7850	0.0753	-0.0014	0.0284
coverage	-0.0003	0.0005	-0.5570	0.5779	-0.0013	0.0007
ep	0.0320	0.0095	3.3515	0.0009	0.0132	0.0508
eps	-0.0029	0.0091	-0.3145	0.7534	-0.0208	0.0151
market_cap	0.0000	0.0000	0.1277	0.8985	0.0000	0.0000

Observations	1711	F (7 , 1...	15.9603
R²	0.0616	Prob. F	0.0000
Adj. R²	0.0577	Log like...	1146.8...
AIC	-1.3312	SIC	-1.3058

Dependent Variable: #CAR_2_126

constant	-0.0731	0.0050	-14.6459	0.0000	-0.0830	-0.0633
#CAR_-1_1	-0.9075	0.0534	-17.0050	0.0000	-1.0125	-0.8025
age	0.0003	0.0001	2.4327	0.0156	0.0001	0.0006
beta	-0.0116	0.0060	-1.9345	0.0540	-0.0233	0.0002
coverage	0.0016	0.0004	4.0564	0.0001	0.0008	0.0024
ep	0.0122	0.0075	1.6165	0.1070	-0.0026	0.0270
eps	0.0156	0.0072	2.1774	0.0302	0.0015	0.0298
market_cap	0.0000	0.0000	-0.1332	0.8941	0.0000	0.0000

Observations	1711	F (7 , 1...	48.7438
R²	0.1669	Prob. F	0.0000
Adj. R²	0.1635	Log like...	1552.5...
AIC	-1.8054	SIC	-1.7799

Dependent Variable: #CAR_2_189

constant	-0.1772	0.0131	-13.5612	0.0000	-0.2029	-0.1515
#CAR_-1_1	-1.0600	0.1397	-7.5892	0.0000	-1.3349	-0.7852
age	0.0008	0.0004	2.1805	0.0300	0.0001	0.0015
beta	-0.0192	0.0156	-1.2279	0.2204	-0.0500	0.0116
coverage	0.0049	0.0010	4.6653	0.0000	0.0028	0.0069
ep	0.0387	0.0197	1.9617	0.0507	-0.0001	0.0774
eps	0.0341	0.0188	1.8146	0.0706	-0.0029	0.0711
market_cap	0.0000	0.0000	-0.5845	0.5593	0.0000	0.0000

Observations	1711	F (7 , 1...	16.5127
R²	0.0636	Prob. F	0.0000
Adj. R²	0.0597	Log like...	-93.6624
AIC	0.1188	SIC	0.1443

Dependent Variable: #CAR_2_252

constant	-0.2352	0.0196	-11.9743	0.0000	-0.2739	-0.1966
#CAR_-1_1	-1.0092	0.2100	-4.8066	0.0000	-1.4224	-0.5960
age	0.0013	0.0005	2.4110	0.0165	0.0002	0.0024
beta	-0.0407	0.0235	-1.7332	0.0841	-0.0870	0.0055
coverage	0.0080	0.0016	5.1138	0.0000	0.0049	0.0111
ep	0.0938	0.0296	3.1666	0.0017	0.0355	0.1521
eps	0.0384	0.0283	1.3573	0.1757	-0.0173	0.0940
market_cap	0.0000	0.0000	-1.1457	0.2528	0.0000	0.0000

Observations	1711	F (7 , 1...	13.0152
R²	0.0508	Prob. F	0.0000
Adj. R²	0.0469	Log like...	-791.13...
AIC	0.9341	SIC	0.9596

EAAR >0 : CP

Dependent Variable: #CAR_2_22

constant	0.0016	0.0050	0.3168	0.7516	-0.0082	0.0113
#CAR_-1_1	-0.1257	0.0574	-2.1888	0.0294	-0.2386	-0.0127
age	0.0001	0.0001	0.5175	0.6052	-0.0001	0.0003
beta	0.0053	0.0052	1.0268	0.3053	-0.0049	0.0155
coverage	-0.0004	0.0003	-1.1157	0.2654	-0.0010	0.0003
cp	-0.0017	0.0008	-2.1173	0.0351	-0.0033	-0.0001
eps	0.0064	0.0057	1.1257	0.2612	-0.0048	0.0177
market_cap	0.0000	0.0000	-0.6234	0.5335	0.0000	0.0000

Observations	1944	F (7 , 1...	2.0367
R²	0.0073	Prob. F	0.0474
Adj. R²	0.0037	Log like...	2043.7...
AIC	-2.0944	SIC	-2.0714

Dependent Variable: #CAR_2_63

constant	-0.0034	0.0061	-0.5584	0.5770	-0.0153	0.0085
#CAR_-1_1	-0.3819	0.0701	-5.4444	0.0000	-0.5199	-0.2438
age	-0.0001	0.0001	-0.4473	0.6550	-0.0003	0.0002
beta	0.0181	0.0063	2.8495	0.0047	0.0056	0.0305
coverage	-0.0009	0.0004	-2.1879	0.0294	-0.0016	-0.0001
cp	-0.0048	0.0010	-4.9084	0.0000	-0.0068	-0.0029
eps	0.0069	0.0070	0.9853	0.3253	-0.0069	0.0206
market_cap	0.0000	0.0000	0.9491	0.3433	0.0000	0.0000

Observations	1944	F (7 , 1...	9.5045
R²	0.0332	Prob. F	0.0000
Adj. R²	0.0297	Log like...	1654.4...
AIC	-1.6939	SIC	-1.6709

Dependent Variable: #CAR_2_126

constant	0.0754	0.0042	17.8793	0.0000	0.0671	0.0837
#CAR_-1_1	-0.9899	0.0489	-20.2603	0.0000	-1.0860	-0.8937
age	0.0000	0.0001	0.0957	0.9238	-0.0002	0.0002
beta	-0.0067	0.0044	-1.5133	0.1312	-0.0154	0.0020
coverage	-0.0013	0.0003	-4.8828	0.0000	-0.0019	-0.0008
cp	-0.0001	0.0007	-0.1381	0.8902	-0.0014	0.0013
eps	0.0019	0.0049	0.3911	0.6960	-0.0077	0.0115
market_cap	0.0000	0.0000	-1.8402	0.0667	0.0000	0.0000

Observations	1944	F (7 , 1...	68.0752
R²	0.1975	Prob. F	0.0000
Adj. R²	0.1946	Log like...	2357.3...
AIC	-2.4170	SIC	-2.3941

Dependent Variable: #CAR_2_189

constant	0.0631	0.0122	5.1575	0.0000	0.0390	0.0872
#CAR_-1_1	-0.8251	0.1418	-5.8192	0.0000	-1.1041	-0.5461
age	0.0001	0.0003	0.2516	0.8016	-0.0004	0.0006
beta	-0.0152	0.0128	-1.1869	0.2362	-0.0404	0.0100
coverage	-0.0011	0.0008	-1.3268	0.1856	-0.0026	0.0005
cp	-0.0032	0.0020	-1.5966	0.1114	-0.0071	0.0007
eps	0.0192	0.0141	1.3655	0.1731	-0.0085	0.0470
market_cap	0.0000	0.0000	0.2082	0.8352	0.0000	0.0000

Observations	1944	F (7 , 1...	6.0698
R^2	0.0215	Prob. F	0.0000
Adj. R^2	0.0179	Log like...	286.1714
AIC	-0.2862	SIC	-0.2633

Dependent Variable: #CAR_2_252

constant	0.0868	0.0188	4.6242	0.0000	0.0498	0.1237
#CAR_-1_1	-0.9273	0.2175	-4.2639	0.0000	-1.3553	-0.4994
age	0.0001	0.0004	0.2302	0.8181	-0.0007	0.0009
beta	-0.0183	0.0197	-0.9335	0.3513	-0.0570	0.0203
coverage	-0.0019	0.0012	-1.5494	0.1223	-0.0043	0.0005
cp	-0.0031	0.0030	-1.0292	0.3042	-0.0091	0.0029
eps	0.0334	0.0216	1.5463	0.1231	-0.0091	0.0760
market_cap	0.0000	0.0000	0.2647	0.7914	0.0000	0.0000

Observations	1944	F (7 , 1...	3.7949
R^2	0.0135	Prob. F	0.0004
Adj. R^2	0.0100	Log like...	-545.46...
AIC	0.5694	SIC	0.5923

EAAR <0 CP

Dependent Variable: #CAR_2_22

constant	0.0019	0.0058	0.3249	0.7455	-0.0096	0.0133
#CAR_-1_1	-0.1061	0.0535	-1.9829	0.0483	-0.2114	-0.0008
age	0.0001	0.0001	1.0876	0.2777	-0.0001	0.0004
beta	-0.0082	0.0060	-1.3628	0.1740	-0.0200	0.0036
coverage	0.0003	0.0004	0.8248	0.4102	-0.0004	0.0011
cp	0.0007	0.0010	0.7058	0.4809	-0.0013	0.0027
eps	-0.0171	0.0069	-2.4884	0.0134	-0.0306	-0.0036
market_cap	0.0000	0.0000	-0.1673	0.8673	0.0000	0.0000

Observations	1342	F (7 , 1...	2.0773
R^2	0.0108	Prob. F	0.0431
Adj. R^2	0.0056	Log like...	1398.7...
AIC	-2.0727	SIC	-2.0417

Dependent Variable: #CAR_2_63

constant	-0.0181	0.0075	-2.4189	0.0162	-0.0328	-0.0034
#CAR_-1_1	-0.6108	0.0688	-8.8835	0.0000	-0.7462	-0.4755
age	0.0000	0.0002	0.1710	0.8643	-0.0003	0.0004
beta	0.0095	0.0077	1.2300	0.2197	-0.0057	0.0247
coverage	0.0002	0.0005	0.3531	0.7243	-0.0008	0.0011
cp	0.0011	0.0013	0.8537	0.3939	-0.0014	0.0036
eps	-0.0141	0.0088	-1.5945	0.1119	-0.0314	0.0033
market_cap	0.0000	0.0000	-0.1466	0.8835	0.0000	0.0000

Observations	1342	F (7 , 1...	12.4344
R^2	0.0613	Prob. F	0.0000
Adj. R^2	0.0563	Log like...	1062.0...
AIC	-1.5709	SIC	-1.5399

Dependent Variable: #CAR_2_126

constant	-0.0640	0.0057	-11.2968	0.0000	-0.0751	-0.0528
#CAR_-1_1	-0.9397	0.0521	-18.0227	0.0000	-1.0423	-0.8371
age	0.0002	0.0001	1.8244	0.0691	0.0000	0.0005
beta	-0.0005	0.0059	-0.0934	0.9256	-0.0121	0.0110
coverage	0.0006	0.0004	1.7024	0.0897	-0.0001	0.0014
cp	0.0004	0.0010	0.3664	0.7143	-0.0016	0.0023
eps	0.0096	0.0067	1.4353	0.1522	-0.0036	0.0227
market_cap	0.0000	0.0000	0.8748	0.3824	0.0000	0.0000

Observations	1342	F (7 , 1...	50.2840
R^2	0.2088	Prob. F	0.0000
Adj. R^2	0.2046	Log like...	1433.3...
AIC	-2.1243	SIC	-2.0933

Dependent Variable: #CAR_2_189

constant	-0.1622	0.0158	-10.2767	0.0000	-0.1933	-0.1312
#CAR_-1_1	-1.3097	0.1453	-9.0139	0.0000	-1.5957	-1.0238
age	0.0005	0.0003	1.4042	0.1613	-0.0002	0.0012
beta	-0.0019	0.0163	-0.1142	0.9091	-0.0340	0.0302
coverage	0.0036	0.0010	3.4671	0.0006	0.0016	0.0057
cp	-0.0082	0.0027	-2.9930	0.0030	-0.0135	-0.0028
eps	0.0286	0.0186	1.5342	0.1260	-0.0081	0.0652
market_cap	0.0000	0.0000	-0.0174	0.9861	0.0000	0.0000

Observations	1342	F (7 , 1...	16.6188
R^2	0.0802	Prob. F	0.0000
Adj. R^2	0.0754	Log like...	58.0649
AIC	-0.0746	SIC	-0.0436

Dependent Variable: #CAR_2_252

constant	-0.2143	0.0229	-9.3588	0.0000	-0.2594	-0.1692
#CAR_-1_1	-1.3965	0.2108	-6.6257	0.0000	-1.8113	-0.9817
age	0.0009	0.0005	1.8170	0.0702	-0.0001	0.0019
beta	-0.0047	0.0237	-0.1972	0.8438	-0.0512	0.0419
coverage	0.0056	0.0015	3.6621	0.0003	0.0026	0.0085
cp	-0.0124	0.0040	-3.1258	0.0019	-0.0202	-0.0046
eps	0.0303	0.0270	1.1200	0.2636	-0.0229	0.0834
market_cap	0.0000	0.0000	-0.4091	0.6827	0.0000	0.0000

Observations	1342	F (7 , 1...	11.6798
R^2	0.0577	Prob. F	0.0000
Adj. R^2	0.0528	Log like...	-441.10...
AIC	0.6693	SIC	0.7003

EAAR>0 SG

Dependent Variable: #CAR_2_22

constant	0.0039	0.0041	0.9464	0.3447	-0.0042	0.0120
#CAR_-1_1	-0.1606	0.0531	-3.0224	0.0027	-0.2652	-0.0560
age	0.0001	0.0001	0.6960	0.4870	-0.0001	0.0003
beta	0.0087	0.0050	1.7483	0.0814	-0.0011	0.0186
coverage	-0.0007	0.0003	-2.1185	0.0350	-0.0013	0.0000
eps	-0.0001	0.0057	-0.0211	0.9832	-0.0114	0.0111
market_cap	0.0000	0.0000	-0.3049	0.7607	0.0000	0.0000
sg	-0.0004	0.0012	-0.3368	0.7365	-0.0028	0.0020

Observations	2360	F (7 , 2...	2.4494
R^2	0.0072	Prob. F	0.0168
Adj. R^2	0.0043	Log like...	2331.4...
AIC	-1.9690	SIC	-1.9495

Dependent Variable: #CAR_2_63

constant	-0.0086	0.0051	-1.6965	0.0908	-0.0186	0.0014
#CAR_-1_1	-0.5118	0.0652	-7.8498	0.0000	-0.6402	-0.3835
age	0.0000	0.0001	-0.1941	0.8463	-0.0003	0.0002
beta	0.0167	0.0061	2.7280	0.0067	0.0047	0.0288
coverage	-0.0006	0.0004	-1.4123	0.1589	-0.0013	0.0002
eps	0.0075	0.0070	1.0733	0.2840	-0.0063	0.0213
market_cap	0.0000	0.0000	0.5488	0.5835	0.0000	0.0000
sg	-0.0006	0.0015	-0.4037	0.6867	-0.0035	0.0023

Observations	2360	F (7 , 2...	10.3065
R^2	0.0298	Prob. F	0.0000
Adj. R^2	0.0269	Log like...	1848.3...
AIC	-1.5596	SIC	-1.5401

Dependent Variable: #CAR_2_126

constant	0.0707	0.0036	19.7730	0.0000	0.0637	0.0777
#CAR_-1_1	-0.8786	0.0460	-19.0957	0.0000	-0.9692	-0.7881
age	0.0000	0.0001	0.0479	0.9618	-0.0002	0.0002
beta	-0.0007	0.0043	-0.1594	0.8734	-0.0092	0.0078
coverage	-0.0014	0.0003	-5.1024	0.0000	-0.0019	-0.0009
eps	0.0020	0.0050	0.4109	0.6814	-0.0077	0.0118
market_cap	0.0000	0.0000	-1.7140	0.0876	0.0000	0.0000
sg	0.0010	0.0010	0.9676	0.3340	-0.0010	0.0031

Observations	2360	F (7 , 2...	61.7213
R²	0.1552	Prob. F	0.0000
Adj. R²	0.1527	Log like...	2671.1...
AIC	-2.2569	SIC	-2.2374

Dependent Variable: #CAR_2_189

constant	0.0599	0.0105	5.6891	0.0000	0.0392	0.0806
#CAR_-1_1	-0.7868	0.1355	-5.8067	0.0000	-1.0534	-0.5201
age	-0.0001	0.0003	-0.2095	0.8342	-0.0006	0.0005
beta	0.0102	0.0128	0.7962	0.4265	-0.0149	0.0353
coverage	-0.0022	0.0008	-2.6765	0.0078	-0.0038	-0.0006
eps	0.0256	0.0146	1.7540	0.0804	-0.0031	0.0543
market_cap	0.0000	0.0000	0.4867	0.6269	0.0000	0.0000
sg	0.0017	0.0031	0.5607	0.5754	-0.0043	0.0078

Observations	2360	F (7 , 2...	6.5837
R²	0.0192	Prob. F	0.0000
Adj. R²	0.0163	Log like...	122.2028
AIC	-0.0968	SIC	-0.0772

Dependent Variable: #CAR_2_252

constant	0.0667	0.0161	4.1454	0.0000	0.0350	0.0984
#CAR_-1_1	-0.6364	0.2071	-3.0725	0.0023	-1.0440	-0.2288
age	0.0000	0.0004	-0.1031	0.9180	-0.0008	0.0008
beta	0.0316	0.0195	1.6222	0.1058	-0.0067	0.0700
coverage	-0.0034	0.0012	-2.7079	0.0072	-0.0058	-0.0009
eps	0.0429	0.0223	1.9258	0.0551	-0.0009	0.0868
market_cap	0.0000	0.0000	0.4176	0.6766	0.0000	0.0000
sg	0.0031	0.0047	0.6632	0.5077	-0.0061	0.0124

Observations	2360	F (7 , 2...	3.2021
R²	0.0094	Prob. F	0.0022
Adj. R²	0.0065	Log like...	-879.33...
AIC	0.7520	SIC	0.7715

EAAR <0 SG

Dependent Variable: #CAR_2_22

constant	0.0004	0.0048	0.0822	0.9346	-0.0091	0.0099
#CAR_-1_1	-0.1466	0.0519	-2.8265	0.0050	-0.2486	-0.0445
age	0.0001	0.0001	0.7025	0.4829	-0.0002	0.0003
beta	-0.0027	0.0058	-0.4639	0.6431	-0.0142	0.0088
coverage	0.0001	0.0004	0.2620	0.7935	-0.0006	0.0008
eps	-0.0121	0.0067	-1.8114	0.0711	-0.0253	0.0010
market_cap	0.0000	0.0000	0.0957	0.9238	0.0000	0.0000
sg	0.0010	0.0014	0.7446	0.4571	-0.0017	0.0038

Observations	1634	F (7 , 1...	1.8733
R²	0.0080	Prob. F	0.0702
Adj. R²	0.0037	Log like...	1604.8...
AIC	-1.9545	SIC	-1.9281

Dependent Variable: #CAR_2_63

constant	-0.0177	0.0063	-2.8193	0.0051	-0.0300	-0.0053
#CAR_-1_1	-0.6580	0.0674	-9.7633	0.0000	-0.7907	-0.5254
age	0.0000	0.0002	0.0978	0.9221	-0.0003	0.0004
beta	0.0051	0.0076	0.6760	0.4995	-0.0098	0.0200
coverage	0.0003	0.0005	0.5652	0.5724	-0.0007	0.0013
eps	-0.0075	0.0087	-0.8628	0.3889	-0.0247	0.0096
market_cap	0.0000	0.0000	-0.0639	0.9491	0.0000	0.0000
sg	0.0020	0.0018	1.0881	0.2774	-0.0016	0.0055

Observations	1634	F (7 , 1...	14.1352
R²	0.0574	Prob. F	0.0000
Adj. R²	0.0533	Log like...	1176.4...
AIC	-1.4302	SIC	-1.4038

Dependent Variable: #CAR_2_126

constant	-0.0743	0.0051	-14.6033	0.0000	-0.0844	-0.0643
#CAR_-1_1	-0.8967	0.0548	-16.3731	0.0000	-1.0045	-0.7889
age	0.0003	0.0001	2.3946	0.0173	0.0001	0.0006
beta	-0.0092	0.0061	-1.4908	0.1371	-0.0213	0.0029
coverage	0.0016	0.0004	4.0352	0.0001	0.0008	0.0024
eps	0.0171	0.0071	2.4093	0.0166	0.0031	0.0310
market_cap	0.0000	0.0000	-0.1703	0.8649	0.0000	0.0000
sg	-0.0005	0.0015	-0.3066	0.7594	-0.0034	0.0025

Observations	1634	F (7 , 1...	45.2457
R²	0.1630	Prob. F	0.0000
Adj. R²	0.1594	Log like...	1515.5...
AIC	-1.8453	SIC	-1.8188

Dependent Variable: #CAR_2_189

constant	-0.1705	0.0130	-13.0795	0.0000	-0.1962	-0.1449
#CAR_-1_1	-1.0191	0.1403	-7.2650	0.0000	-1.2951	-0.7430
age	0.0007	0.0004	1.8648	0.0632	0.0000	0.0014
beta	-0.0119	0.0157	-0.7574	0.4494	-0.0429	0.0191
coverage	0.0043	0.0010	4.1436	0.0000	0.0022	0.0063
eps	0.0404	0.0181	2.2290	0.0266	0.0047	0.0761
market_cap	0.0000	0.0000	-0.3189	0.7501	0.0000	0.0000
sg	0.0019	0.0038	0.4907	0.6240	-0.0056	0.0093

Observations	1634	F (7 , 1...	14.1651
R^2	0.0575	Prob. F	0.0000
Adj. R^2	0.0534	Log like...	-21.1945
AIC	0.0357	SIC	0.0622

Dependent Variable: #CAR_2_252

constant	-0.2144	0.0194	-11.0267	0.0000	-0.2526	-0.1761
#CAR_-1_1	-1.0083	0.2092	-4.8202	0.0000	-1.4199	-0.5966
age	0.0011	0.0005	2.0293	0.0433	0.0000	0.0021
beta	-0.0332	0.0235	-1.4134	0.1586	-0.0794	0.0130
coverage	0.0068	0.0015	4.4547	0.0000	0.0038	0.0099
eps	0.0446	0.0270	1.6479	0.1004	-0.0087	0.0978
market_cap	0.0000	0.0000	-0.7894	0.4305	0.0000	0.0000
sg	0.0022	0.0056	0.3894	0.6973	-0.0089	0.0133

Observations	1634	F (7 , 1...	9.5150
R^2	0.0394	Prob. F	0.0000
Adj. R^2	0.0352	Log like...	-674.20...
AIC	0.8350	SIC	0.8614

Appendix E: Robustness Check for other proxies

Table 14a - Robustness Check: EAAR/ES portfolios using EP as a proxy – Size Effect

Size_rank	EP_rank	obs	MV (M £)	EP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: Earnings Surprise>0 & EAARs>0					
Small	Glamour 1	28	204	-0.50	6.89***	4.23	5.16	4.17	-2.97	-8.29
Small	Value 5	51	830	0.18	5.54***	-0.89	-1.46	5.15	6.9	17.41**
Spread					**-1.35**	**-5.12**	**-6.62**	**0.98**	**9.87**	**25.7**
Big	Glamour 1	23	10657	0.03	3.77***	1.09	0.63	-0.4	1.42	-0.84
Big	Value 5	23	35883	0.15	3.03***	0.34	1.7	2.14	2.57	2.6
Spread					**-0.74**	**-0.75**	**1.07**	**2.54**	**1.15**	**3.44**
					Panel B: Earnings Surprise<0 & EAARs<0					
Small	Glamour 1	141	181	-0.40	-8.89***	-5.32**	-12.74***	-24.28***	-36.72***	-41.56***
Small	Value 5	257	360	0.20	-7.06***	-1.64***	-8.29***	-9.48***	-12.72**	-17.49***
Spread					**1.83**	**3.68**	**4.45**	**14.8**	**24**	**24.07**
Big	Glamour 1	70	7976	0.02	-4.58***	-1.74*	-6.39**	-11.56**	-13.13**	-13.22*
Big	Value 5	127	35609	0.12	-3.39***	-0.71*	-2.87***	-3.27**	-6.84***	-8.31***
Spread					**1.19**	**1.03**	**3.52**	**8.29**	**6.29**	**4.91**
Spread	**Small**				**14.43**	**4.43**	**11.28**	**29.43**	**43.62**	**58.97**
Spread	**Big**				**7.61**	**2.08**	**8.09**	**13.7**	**15.7**	**15.82**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the Size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every size/ proxy portfolio can be consulted in Appendix E

Table 14b - Robustness Check: EAAR portfolios using EP as a proxy – Size Effect

Size_rank	EP_rank	obs	MV (M £)	EP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: EAARs>0					
Small	Glamour 1	185	146	-0.32	6.22***	2.11*	1.65	4.79	0.54	1.54
Small	Value 5	529	380	0.17	5.32***	0.42	-0.44	0.48	-1.1	-1.29
Spread					**-0.9**	**-1.69**	**-2.09**	**-4.31**	**-1.64**	**-2.83**
Big	Glamour 1	151	7955	0.02	5.23***	-0.19	-0.78*	0.3	0.71	0.96
Big	Value 5	190	33602	0.12	3.03***	-0.95**	-0.41	-0.36	-0.47	0.56
Spread					**-2.2**	**-0.76**	**0.37**	**-0.66**	**-1.18**	**-0.4**
					Panel B: EAARs<0					
Small	Glamour 1	155	161	-0.39	-9.35***	-5.1**	-14.13***	-26.54***	-40.96***	-49.71***
Small	Value 5	318	371	0.21	-7.01***	-1.36***	-7.29**	-8.08***	-11.35***	-14.75***
Spread					**2.34**	**3.74**	**6.84**	**18.46**	**29.61**	**34.96**
Big	Glamour 1	90	7976	0.02	-4.78***	-0.64	-3.87*	-7.07***	-9.84*	-9.94*
Big	Value 5	161	34887	0.12	-3.19***	-0.95***	-2.43***	-3.3***	-5.45**	-6.54***
Spread					**1.59**	**-0.31**	**1.44**	**3.77**	**4.39**	**3.4**
Spread	**Small**				**14.67**	**5.52**	**13.69**	**27.02**	**39.86**	**48.42**
Spread	**Big**				**7.81**	**-0.31**	**3.46**	**6.71**	**9.37**	**10.5**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the Size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every size/ proxy portfolio can be consulted in Appendix E

Table 15a - Robustness Check: EAAR/ES portfolios using CP as a proxy – Size Effect

Size_rank	CP_rank	obs	MV (M £)	CP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: Earnings Surprise>0 & EAARs>0					
Small	Glamour 1	24	588	-0.11	5.44***	-1.07	-4.04*	0.85	-6.93*	-9.96*
Small	Value 5	40	647	0.41	7.09***	2.38	5.68*	12.61**	15.59**	28.86**
Spread					**1.65**	**3.45**	**9.72**	**11.76**	**22.52**	**38.82**
Big	Glamour 1	23	17761	0.01	3***	-0.57	-1.25	-2.17	-4.97	-6.96
Big	Value 5	26	29049	0.16	3.87***	0.98	5.44*	8.43**	14.63***	18.48***
Spread					**0.87**	**1.55**	**6.69**	**10.6**	**19.6**	**25.44**
					Panel B: Earnings Surprise<0 & EAARs<0					
Small	Glamour 1	87	359	-0.76	-8.36***	-0.45	-8.27*	-11.58***	-17.03**	-16.02**
Small	Value 5	177	388	1.45	-6.7***	-2.38***	-11.02**	-15.2***	-22.45***	-24.78**
Spread					**1.66**	**-1.93**	**-2.75**	**-3.62**	**-5.42**	**-8.76**
Big	Glamour 1	70	147	0.01	-3.83***	-0.26	-2.5**	-4.23***	-6.81***	-5.55***
Big	Value 5	115	796	0.16	-3.91***	-1.11*	-4.4***	-5.9*	-7.24***	-10.59***
Spread					**-0.08**	**-0.85**	**-1.9**	**-1.67**	**-0.43**	**-5.04**
Spread	**Small**				**15.45**	**2.83**	**13.95**	**24.19**	**32.62**	**44.88**
Spread	**Big**				**7.7**	**1.24**	**7.94**	**12.66**	**21.44**	**24.03**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the Size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every size/ proxy portfolio can be consulted in Appendix E

Table 15b - Robustness Check: EAAR portfolios using CP as a proxy – Size Effect

Size_rank	CP_rank	obs	MV (M £)	CP	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: EAARs>0					
Small	Glamour 1	111	356	-0.65	6.06***	-0.25	-1.94	-0.96	-7.02**	-9.92**
Small	Value 5	350	349	1.40	5.83***	0.87	0.67	2.04	1.09	3.67
Spread					**-0.23**	**1.12**	**2.61**	**3**	**8.11**	**13.59**
Big	Glamour 1	151	12463	0.01	3.49***	-0.82**	-1.14*	-0.95	-2.71**	-3.1**
Big	Value 5	187	20526	0.16	3.98***	0.27	1.56	1.08	1.73	2.95
Spread					**0.49**	**1.09**	**2.7**	**2.03**	**4.44**	**6.05**
					Panel B: EAARs<0					
Small	Glamour 1	98	319	-0.73	-9.03***	-0.99	-10.83**	-14.82***	-25.72*	-30.7**
Small	Value 5	226	349	1.46	-6.47***	-1.58**	-8.98*	-13.21***	-20.7***	-24.25***
Spread					**2.56**	**-0.59**	**1.85**	**1.61**	**5.02**	**6.45**
Big	Glamour 1	90	12889	0.01	-3.81***	-0.52*	-3.08***	-4.22*	-6.21***	-5.42***
Big	Value 5	158	21027	0.16	-3.66***	-0.89**	-3.35***	-4.15*	-4.92**	-7.31**
Spread					**0.15**	**-0.37**	**-0.27**	**0.07**	**1.29**	**-1.89**
Spread	**Small**				**14.86**	**1.86**	**11.5**	**16.86**	**26.81**	**34.37**
Spread	**Big**				**7.79**	**0.79**	**4.64**	**5.3**	**7.94**	**8.37**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the Size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every size/ proxy portfolio can be consulted in Appendix E

Table 16a - Robustness Check: EAAR/ES portfolios using SG as a proxy – Size Effect

Size_rank	SG_rank	obs	MV (M £)	SG	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: Earnings Surprise>0 & EAARs>0					
Small	Value 1	26	546	-0.47	6.07***	0.45	-0.75*	3.6	-0.46*	4.48
Small	Glamour 5	47	642	0.94	5.38***	-1.14	0.12	1.49	2.92	4.91
Spread					**0.69**	**1.59**	**-0.87**	**2.11**	**-3.38**	**-0.43**
Big	Value 1	23	22147	-1.01	2.8***	0.05	2.15	4.06	1.41	4.14
Big	Glamour 5	25	11931	0.28	3.39***	0.31	0.73	1.48	2.44	2.84
Spread					**-0.59**	**-0.26**	**1.42**	**2.58**	**-1.03**	**1.3**
					Panel B: Earnings Surprise<0 & EAARs<0					
Small	Value 1	134	379	-0.53	-6.54***	-3.68***	-9.33***	-9.84*	-12.95***	-14.87***
Small	Glamour 5	248	486	0.73	-5.08***	-0.92	-6.51***	-10.36***	-13.49***	-16.61***
Spread					**-1.46**	**-2.76**	**-2.82**	**0.52**	**0.54**	**1.74**
Big	Value 1	71	26971	-0.84	-3.2***	0.04	-1.76*	-1.81	-1.89	-3.08*
Big	Glamour 5	127	13996	1.77	-3.43***	-0.29	-1.78**	-2.82**	-4.97***	-5.03***
Spread					**0.23**	**0.33**	**0.02**	**1.01**	**3.08**	**1.95**
Spread	**Small**				**11.15**	**1.37**	**5.76**	**13.96**	**13.03**	**21.09**
Spread	**Big**				**6.23**	**0.34**	**3.93**	**6.88**	**6.38**	**9.17**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the Size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every size/ proxy portfolio can be consulted in Appendix E

Table 16b - Robustness Check: EAAR portfolios using SG as a proxy – Size Effect

Size_rank	SG_rank	obs	MV (M £)	SG	EAAR (%)	1mth (%)	3mth (%)	6mth (%)	9mth (%)	1yr (%)
					Panel A: EAARs>0					
Small	Value 1	176	362	-0.58	5.27***	0.48	1.97	3.31	3.79	5.82*
Small	Glamour 5	492	481	0.77	4.92***	0.76*	0.07	1.25*	0.88	0.46
Spread					**0.35**	**-0.28**	**1.9**	**2.06**	**2.91**	**5.36**
Big	Value 1	156	26184	-0.81	3.4***	-0.32	-0.16	0.19	-1.42	0.96
Big	Glamour 5	189	13598	1.71	3.31***	-0.51	-0.71	-0.47	-0.12	1.18
Spread					**0.09**	**0.19**	**0.55**	**0.66**	**-1.3**	**-0.22**
					Panel B: EAARs<0					
Small	Value 1	144	365	-0.62	-6.48***	-2.92**	-8.49**	-8.54***	-11.61*	-13.57**
Small	Glamour 5	303	484	0.72	-4.87***	-0.7	-5.21***	-8.07***	-11.65***	-14.88***
Spread					**-1.61**	**-2.22**	**-3.28**	**-0.47**	**0.04**	**1.31**
Big	Value 1	88	26971	-0.84	-3.11***	-0.23	-2.4*	-2.25	-2.18	-3.74**
Big	Glamour 5	160	13865	1.78	-3.21***	-0.34**	-2.07***	-2.62***	-4.99***	-5.28***
Spread					**0.1**	**0.11**	**-0.33**	**0.37**	**2.81**	**1.54**
Spread	**Small**				**10.14**	**1.18**	**7.18**	**11.38**	**15.44**	**20.7**
Spread	**Big**				**6.61**	**0.02**	**1.91**	**2.81**	**3.57**	**6.24**

Note: The values are represented in CAAR-values for each corresponding event window and post-event window based on the Size/BM classification portfolio. The significant levels are representing by: * for 10%, ** representing 5% and *** denotes for 1% under T1 Standardized Residual Test. If the values are in grey shaded then is either T2: Rank Test or T3 Generalized Sign Test, supporting the rejection. Every size/ proxy portfolio can be consulted in Appendix E